

FIRST CONCURRENT RESOLUTION ON THE BUDGET—FISCAL YEAR 1985

HEARINGS BEFORE THE COMMITTEE ON THE BUDGET UNITED STATES SENATE NINETY-EIGHTH CONGRESS SECOND SESSION

FEBRUARY 6, 1984
FEBRUARY 21, 1984
FEBRUARY 23, 1984 } NATIONAL SECURITY AND INTERNATIONAL AFFAIRS
MARCH 6, 1984
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NATIONAL SECURITY AND INTERNATIONAL AFFAIRS

MONDAY, FEBRUARY 6, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 9:30 a.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Boschwitz, Andrews, Symms, Grassley, Quayle, Gorton, Chiles, Biden, Johnston, Riegle, and Exon.

Staff present: Stephen Bell, staff director; Charles Flickner, senior analyst for international security, energy, credit, and international affairs; and Paul Heilig, analyst for national security.

For the minority: Richard N. Brandon, staff director; and Doug Cook, senior analyst for defense.

Chairman DOMENICI. The committee will come to order.

I understand we will have a number of Senators who will be in and out. The sooner we start, the sooner we finish, and also the more time the Secretary will have to answer questions.

I am going to have to leave for 5 minutes at 10 o'clock, Senator Andrews, to introduce a nominee before the Energy Committee. If I leave, please chair the meeting while I am gone.

Senator ANDREWS. I will be glad to.

OPENING STATEMENT OF CHAIRMAN DOMENICI

Chairman DOMENICI. On behalf of the committee, I am pleased to welcome you, Secretary Weinberger, and you, General Vessey. Secretary Weinberger, this marks the fourth year in a row that you have come before this committee to explain the President's request. I think it is fair to say that there is no more steadfast or tenacious defender of the need for increased military spending in the administration than you, Mr. Secretary. You have presented your case well. I suspect that the heightened morale we find in our armed services today is in large part because of our fighting men and women's respect for the President and, if I might say, Mr. Secretary, for you. I think they know that you will go all out for them. For that, I congratulate you and in a very real way thank you.

Secretary WEINBERGER. Thank you, sir.

Chairman DOMENICI. I do not think I am revealing any confidences when I say that you and I have upon occasion had differing judgments on the level of defense spending required for the Nation. However, I believe it is fair to say that our goals have, for the most

part, been the same. In addition, it is factually accurate to note that, despite the great attention given to the differences, that the most noteworthy thing is how much we have been in agreement and how much this committee has been in agreement in terms of its majority. Some numbers from the past will illustrate what I mean.

DEFENSE INCREASES GRANTED ARE UNPRECEDENTED

In fiscal year 1982 you came here in behalf of the President and requested \$226.3 billion for function 050. Congress gave you 100 percent of that in the first resolution for that year. In fiscal year 1983 on behalf of the President you requested \$263.3 billion in budget authority. Congress gave you \$253.6, as measured by the first budget resolution for that year, or about 96.3 percent of the request. Finally, last year you requested on behalf of the President \$280.5 billion, and we approved \$268.6 billion, or 95.8 percent. Thus, in the aggregate, the President through you has been successful in a manner perhaps unprecedented, Mr. Secretary, since World War II in getting almost every request for defense increases granted.

Now, I will acknowledge that, while the Congress in the budget resolution last year gave the President 95.8 percent of his request the appropriators have taken \$4 billion from that—and that is a significant diminution. That puts it down around 94 percent of the request. I am sure you will address that issue today in terms of your estimate of what that reduction does to the preparedness goals.

This remarkable record comes on top of 2 years, 2 previous years in which Congress itself, led by many members of this committee, reversed a decade-long erosion in defense spending. Now, we did not reverse it as much as it should have been, but we started the reversal. It is fair to say that, for about 6 years, defense has been treated on the plus side by the Congress rather than on the negative side.

By way of a technical and more precise estimate, let me note also that, until 1979 we had put such things as foreign military sales and military aid in function 050. I think you are aware of that.

Secretary WEINBERGER. Yes.

Chairman DOMENICI. Since then we have put those in function 150, but I am not sure in terms of comparing whether we were not better in the seventies than we are now in terms of where that belongs.

DEFENSE GROWTH NECESSARY AND PRUDENT

The growth then that we have actually had has been necessary and prudent. During the seventies, real growth for defense was a negative 21 percent. We simply had to turn that around. Any disputes that I have had as to annual levels certainly do not intend to negate that reality and the necessity in terms of increased budgets that it has created. Because at the same time we had 21 percent real growth on the negative side, the Soviet Union was spending more.

In fact, Mr. Secretary, I once said, and I believe it is still true, that when we spend more on defense, they spend more; and when we spend less, they still spend more. So, those that think they mimic us have a real job of proof when we spend less and they spend more. So, the Soviet threat did grow. Their adventurism became more widespread, and we had to react.

We have done so with leadership not only from the President but from the Congress itself, prompted by all of the considerations that have been outlined here.

We are just beginning to turn on the production lines that will create new systems. I think we all know what they are. Perhaps you will be asked about them today, the B-1 bomber, the C-5B, the MX, the M-1 tank, the DDG-51 destroyer, the CG-47 cruiser, the F-18 fighter, and others. Given this, I can understand why the Pentagon managers may not be thinking about retrenchment. But all of our budgetary plans, defense and nondefense, must be reviewed in light of the enormous deficit problems that now confront the country.

I call for this review of the defense budget request not because I believe the Soviet Union and its proxies have changed either their stripes or their goals; far from it. I think I know more about it now than I did a few years ago, and I am more concerned rather than less concerned. So, with time, the problem is not going away.

We also are going to ask our committee to have the net assessment briefing, which is a classified briefing. We have not had that in a few years. I think, if we are going to be called upon to make and set goals, be they tentative or permanent, that we ought to have that net assessment briefing. We will do it in the near future, and I am sure you will cooperate in helping us with that.

ENTIRE BUDGET REQUEST CANNOT BE AFFORDED

I have reviewed this year's request. I have reviewed the rest of the budget submission. Reluctantly, with undiminished respect for the President and you, I have concluded that we cannot afford the entire increase requested. I hope we can work together on a compromise. I pledge to do so in good faith.

I have not made up my mind as to what level. I have some ideas. I have not yet decided what I personally would recommend to the committee, but I think we will be working together on that.

Let me conclude on this note. I have often said that more Americans need to recognize profoundly our responsibility to the rest of the world and to our tenet of freedom for the individual. I simply mean that America needs a stronger defense. Prudence dictates that Americans are going to have to pay for it.

One reason that I have not opposed new revenues, as we talk about the future, especially in the form of closing loopholes and a fair tax system, is that I believe that Americans must buy the security that both we and the rest of the world require. Our power is greater than any other force for freedom and our burden larger. A mature nation recognizes this extra burden and will sacrifice in order to fulfill its responsibilities. Thus, I will support a defense level somewhat lower than that requested, but I will be reluctant to cut very much. If we need to spend more, then I will be willing

to continue the path of substantial restraint in other programs; and I will also support new revenues for the Government. I have concluded that our most important task still is defined in the Constitution very simply, and that is to provide for the common defense. It is more difficult, more subtle, but nonetheless it remains our most serious responsibility.

In the absence of Senator Chiles, I would ask if you have some opening remarks, Senator Riegle, and then we will proceed with the Secretary's testimony.

OPENING STATEMENT OF SENATOR RIEGLE

Senator RIEGLE. Thank you, Mr. Chairman. I think some of your remarks were important ones and helpful ones in the sense of the need to examine very carefully the defense request and to decide how best to try to bring it more into a financial size which we can afford.

I would hope, Mr. Secretary, that in the course of your comments today we will have an opportunity to hear from you as to how the Defense Department assesses the overall financial and economic effect of the defense spending buildup on the financial capacity of the Government, and for that matter of the country as well. I think it is fair to say that in the Congress, on both sides of the aisle, there is a great concern about the sheer financial weight of what can only be described as a massive military buildup, not just over the last 3 years but projected out for the next several years.

Former President Ford, well acquainted to you and to me and who certainly takes a very serious view of national defense, has publicly said that he feels we are spending defense money at too rapid a rate. He has publicly called for a stretchout of that spending, as you know, because of his concern that it is now, in combination with other events, creating financial risks and dangers to the national economy. So, when we hear comments coming from someone like Gerald Ford, who himself served as Commander in Chief and is in your party politically, I think it indicates that there is a genuine concern that we have gone overboard in terms of the rate and size of the defense buildup.

As you know, last year, when you were here, you made a very substantial request for increased defense spending. This committee and the Congress, the Senate, decided that we could not afford that much and that it was not justified in the face of all of the considerations. As you know, the Congress cut back on your request last year, finally cutting the requested increase in real growth roughly in half, from something like a 10-percent real growth increase to something closer to a 5-percent real growth increase. So, there clearly is a concern in the Congress that is very widespread that, while we need to be strong and we need to commence with the modernization and force improvement on the conventional side, that there are outer limits in terms of the financial impact of this kind of buildup.

I would hope that you would address that issue directly today, if that kind of analysis has been done.

WASTE IN DEFENSE PROCUREMENT IS NATIONAL EMBARRASSMENT

Finally, in the area of waste in defense procurement, as you know, this has really become a matter of national embarrassment. I think it embarrasses all of us, the fact that there is instance after instance brought forward of items that are procured for the defense system that either do not work properly, are much too expensive, where there are cost overruns that are unconscionably large and would not be accepted in other areas of Government spending. While there has been some controversy about it, members of this committee like Senator Grassley and others who tried to bore in, I think, on this problem to see what we can do about it, the feeling that one has is that this is still not seen as a serious problem with the Defense command hierarchy. And, really, not much seems to have been done to deal with this problem.

I think I can say that the American people would like to see further steps taken. They would like to see an aggressive posture taken by the Secretary of Defense in getting after some of this procurement waste and overspending at a time when the Government as a whole is under tremendous financial pressure.

I will elaborate on that when my question time comes. Thank you, Mr. Chairman.

Chairman DOMENICI. Thank you very much, Senator. Mr. Secretary, you may proceed.

STATEMENT OF HON. CASPAR W. WEINBERGER, SECRETARY OF DEFENSE

Secretary WEINBERGER. Thank you very much, Mr. Chairman. I appreciate very much the remarks you made and will look forward to the opportunity to present responses and additional information as you request it.

I have a few charts that I would like to go over with you and the committee. I also have a rather full statement which I would ask permission to put into the record at this point.

Chairman DOMENICI. It will be made a part of the record, without objection.¹

DEFENSE BUDGET HAS NO ADVERSE EFFECTS ON ECONOMY

Secretary WEINBERGER. We wanted to go over these, Mr. Chairman, because we wanted to take up with you and the committee the ways in which the Department of Defense budget is put together. I think we all have to be conscious of the fact that there are indeed constraints, there are indeed limits, there are indeed economic considerations that have to be kept in mind. I think we also have to keep in mind, as we will point out a little later, the fact that the defense budget does not have in any sense adverse effects on the economy, quite the contrary. But that is not a reason for doing it. If we wanted simply to stimulate the economy, this would probably be a pretty good place to start. But that is not the way we make up the defense budget, nor is it any way I would want to present to you.

¹ See p. 26.

What we do with the defense budget is to look at the objectives that we have as a country. These are set forth on chart 1. Of course, the very first has to be the overriding importance of deterring any attack against the United States and our allies and to counter any use of force that is made to force or intimidate us. The other objectives that we have set forth here are the ones that we feel it is essential that we realize.

Chart 1

NATIONAL SECURITY OBJECTIVES

- **DETER ATTACK AGAINST U.S. AND ITS ALLIES AND COUNTER USE OF FORCE TO COERCE OR INTIMIDATE U.S. FRIENDS AND ALLIES**
- **IF ATTACKED, DENY ENEMY ITS OBJECTIVES AND BRING CONFLICT TO CONCLUSION FAVORABLE TO U.S. INTERESTS**
- **TO PROMOTE MUTUAL REDUCTIONS IN CONVENTIONAL AND NUCLEAR FORCES THROUGH NEGOTIATIONS AND TO DISCOURAGE FURTHER PROLIFERATION OF NUCLEAR WEAPONS**
- **TO INHIBIT FURTHER SOVIET EXPANSION AND TO INDUCE WITHDRAWAL BY THE SOVIET UNION FROM THOSE COUNTRIES IT OCCUPIES BY FORCE**
- **TO JOIN WITH OUR ALLIES IN PREVENTING THE FLOW OF MILITARILY SIGNIFICANT TECHNOLOGIES AND MATERIALS TO THE SOVIET UNION**

Chart 2 shows the way in which these objectives are threatened at the moment. They are threatened, as you indicated, Mr. Chairman, by the enormous expansion of Soviet military power that has taken place without interruption for over 22 years, on both a quantitative and qualitative aspect. It involves building up both their strategic nuclear forces and modernizing them. At the same time, they are enormously expanding and modernizing through very late technology, often stolen from us, their conventional forces. This has given them a global expansion capability. It has also lead to a number of Third World instabilities which we have seen very vividly in Grenada, Lebanon, Afghanistan, Angola, Ethiopia, Kampuchea, and Nicaragua; almost any one of these places where the Soviets, who love to fish in troubled waters, have contributed to the Third World, not in the way that we have tried, but by adding to the instabilities that we have already recited.

THE SOVIET THREAT

EXPANSION OF SOVIET MILITARY POWER

- QUANTITATIVE AND QUALITATIVE INCREASES IN WEAPONS AND EQUIPMENT
- BUILDUP OF STRATEGIC NUCLEAR FORCES
- OFFENSIVE NATURE OF DOCTRINE AND MILITARY CAPABILITIES
- GLOBAL EXPANSION

THIRD WORLD INSTABILITIES

- GRENADA — SOVIET MADE WEAPONS, EQUIPMENT AND DOCUMENTS
- LEBANON — SOVIET BACKED AND EQUIPPED SYRIAN FORCES
- AFGHANISTAN, ANGOLA, ETHIOPIA, KAMPUCHEA, AND NICARAGUA — SOVIET TROOPS OR SOVIET PROXIES ARE SOURCE OF CONFLICT

Chart 3 is a large one, which shows the capability of the Soviets to project their power and the ways in which they would do that. You will see here in the various colors the naval facilities that they have and opportunities to use, the air facilities that they have an opportunity to use, and the other client states whose troops they use. The black lines indicate the lines of communication that they would have to use to project their power and that they do use. And these lines have a remarkable similarity to the lines of communication that we have to use to keep a supply of very valuable strategic minerals and metals that we do not have coming to the United States and also to supply or reinforce our allies. So, these abilities of the Soviet Union underline, emphasize, and explain the need for the great expansion that we feel is essential for our fleet and which is now under way and which also, of course, indicates the importance of maintaining the kind of global air capability that we have to have.

SOVIET GLOBAL POWER PROJECTIONS



SOVIET UNION AHEAD BY ALARMINGLY LARGE RATIOS

Another dimension of the threat is the way in which they have not only outspent us—and there is some dispute within the intelligence community, largely an academic dispute, I think—as to the precise rate of growth of their spending in the last few years. Some are now saying it is a little lower than others have said it was a few years ago. That is an interesting dispute, but the important point is what do they get for it. What is the output? They get an enormous amount. For one thing, they have been spending between 17 and 19 percent of their GNP. We are in the 6.9 or 7 percent range and will not go above 7.5 of our GNP through 1989. They have been investing in military hardware on a very large and increasing scale.

Warsaw pact production, as we see here by these various ratios (chart 4), of particular items that constitute the threat, has been very much larger than the NATO production, including our own. Some people have said, well, there are certain items where we are ahead. What we are pointing out to you here are the areas in which they are ahead and the ways in which these therefore constitute and underline the threat which is against us. There are a couple of items in which we are ahead, the cruise missiles shown on this chart. And, of course, obviously we are ahead in very large, very heavy aircraft carriers. But in most of the ways in which you measure both strategic and nuclear strength, they have been ahead by alarmingly large ratios for many, many years.

Chart 4

NATO WARSAW PACT COMPARISONS

Over the decade 1974-1983, the Soviet's military spending exceeded ours by about 40%.

DIA estimates that Soviet military spending will consume about 17-19% of their GNP by the late 1980's as compared to about 7.5% in the US.

The Pact has been investing more heavily in military hardware than the free world since 1972. Cumulatively from 1972 to 1981, they outspent us by about 20%.

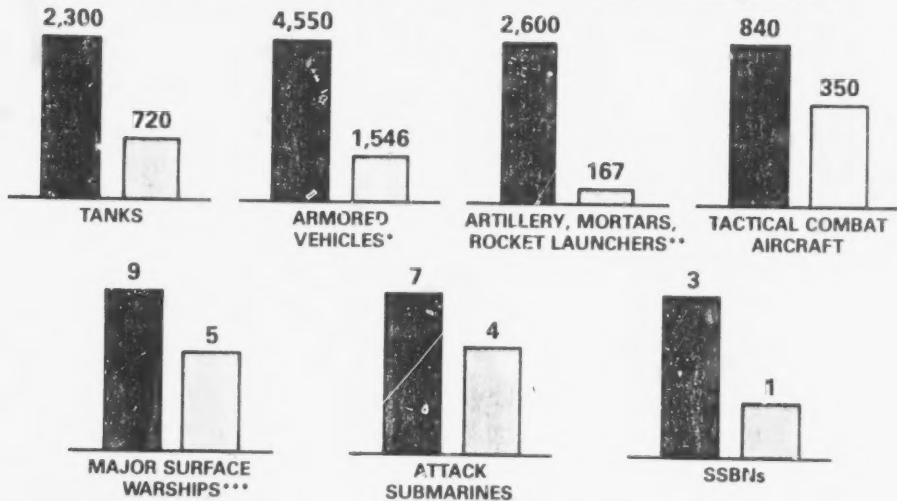
The Pact production continues to outpace NATO's by alarming ratios in most categories:

	<u>Tanks</u>	1.8/1
	Other Armored Vehicles	1.9/1
Artillery, Mortar and Rocket Launchers		7.3/1
	Military Helicopters	1.7/1
	Surface-to-Air Missiles	2.8/1
	Strategic Nuclear Missiles	4.9/1
	Cruise Missiles	0.6/1

Another way of displaying that is on chart 5, which covers such things as tanks and armored vehicles, artillery, combat aircraft, nuclear submarines, attack submarines, and surface warships. In all of these vehicles, they have substantially outbuilt us.

Chart 5

A COMPARISON OF AVERAGE ANNUAL SOVIET PRODUCTION AND FY 1985 U.S. REQUESTS



* INCLUDES IFV
 ** 100 MM OR GREATER
 *** INCLUDES BATTLESHIP REACTIVATION

■ USSR □ U.S.

Those figures there, Mr. Chairman, are the average annual Soviet production for over 10 years. The chart shows the amounts that we are requesting this year in this 1985 budget which some say are too large.

NO LET UP BY SOVIET UNION DURING DECADE OF SEVENTIES

Here chart 6 illustrates one of the reasons we are so far behind on the strategic side. You will see here that in the decade between the sixties and the seventies we managed to modernize and deploy our intercontinental ballistic missile system. We did some additional work on a new missile and a submarine for the submarine leg of the triad. So did the Soviets, all through that same decade of the sixties. And then essentially we stopped in the decade of the seventies and only worked on one new missile, the C-4, which will be replaced by the D-5 starting in 1989. The Soviets, however, did not stop during this decade. They kept going. So, they are in the third generation of new missiles, the SS-18's, the SS-17's, the SS-19's, the SS-16's. The 20 of course, does not show because these are strategic systems; but that was a huge development. And they also modernized and improved their submarines. They made them quieter. They made their missiles more accurate and more destructive, all during that whole period. They did not have a decade in which they stopped. That, of course, is why we have to do so much now.

Chart 6

STRATEGIC SYSTEMS

	SALT I		SALT II
UNITED STATES			ALCM
BOMBERS, CRUISE MISSILES	   		
INTER-CONTINENTAL BALLISTIC MISSILES			
SUBMARINE-LAUNCHED BALLISTIC MISSILES	  		
BALLISTIC MISSILE SUBMARINES	SSBN IX		SSBN 72
SOVIET UNION	1980	1990	2000
BOMBERS, CRUISE MISSILES			Backfire
INTER-CONTINENTAL BALLISTIC MISSILES	SSB 	SSB  SS-9  SS-11  SS-13 	SS-9  SS-17  SS-18 
SUBMARINE-LAUNCHED BALLISTIC MISSILES	SSBN 	SSBN 	SSBN  SSBN-7  SSBN-20 
BALLISTIC MISSILE SUBMARINES	K II 	V 	TN  OJ  Typhoon 

So, what we try to do now is the problem that is set forth in this budget, which is the normal and proper increment, the fourth increment of the President's program to regain a degree of military strength that is sufficient to maintain deterrence. We do not seek military superiority. What we are talking about is enough military strength and to regain it as quickly as we can so that we can maintain the deterrent that has been one of the principal factors, if not the principal factor, in maintaining the peace between the superpowers all of these years.

SOVIETS SPEND LARGER PERCENTAGE OF BUDGET ON MILITARY STRENGTH

Chairman DOMENICI. Mr. Secretary, before you proceed, just to put a final line on those materiel comparisons, does your same source of information draw a comparison of the manpower costs to the Soviet Union versus the manpower cost to us?

Secretary WEINBERGER. Yes; it does. I was going to mention that later; I am delighted to do it now. One of the real problems, Mr. Chairman, is that in our budget over the past few years the average has run around 50 percent of our budget for personnel costs. For fiscal year 1985, it is about 43 percent because we are putting more into procurement, and we did not have the pay increase that would otherwise have been the case if it had not been for our general austerity and restraint program.

The comparable Soviet figure for personnel, against our nearly half the budget, is 11 percent. So, they get roughly 89 percent of their budget for additional military strength, and we get about half

of ours for additional military strength. We would not want it any other way, but it says a great deal about the two societies, to indicate that there is that difference in the spending for personnel and their quality of life, and all of the aspects that go with personnel payments.

What we have to do now, in order to meet this threat, is to strengthen our deterrence, both conventionally and strategically. We have the unenviable and unfortunate task of having to modernize all three parts of the triad at once, instead of spreading it all over part of the seventies (chart 7). At the same time that we are doing this—as a way of getting more effective arms reduction—we are working for arms reduction; we do not believe we could get effective arms reduction in any of these negotiations if we did not enter them from the position of perceived strength, so the Soviets would have some incentive for making reductions. The arms reduction aspect of our strategy is difficult now because there is nobody on the other side of the table. We hope and believe the Soviets will be back, but we work ceaselessly and as patiently as we can to try to secure genuine arms reduction, not treaties that just permit expansions of the kind and the way in which the Soviets wish.

Chart 7

STRATEGY TO MEET THE THREAT

STRENGTHENING DETERRENCE WHILE WORKING FOR ARMS REDUCTION

- **CONVENTIONAL DETERRENCE:**
 - COLLECTIVE DEFENSE
 - FORWARD-BASED FORCES
 - SECURITY ASSISTANCE
- **NUCLEAR DETERRENCE:**
 - MULTIPLICITY OF RETALIATORY STRATEGIC FORCES — A TRIAD OF LAND-BASED ICBMs, SMALL MISSILES MANNED BOMBERS, AND SUBMARINE-LAUNCHED BALLISTIC MISSILES.
 - RESPONSIVE AND SURVIVABLE COMMAND, CONTROL, AND COMMUNICATION SYSTEM.
 - STRATEGIC DEFENSE OPTION FOR THE FUTURE.

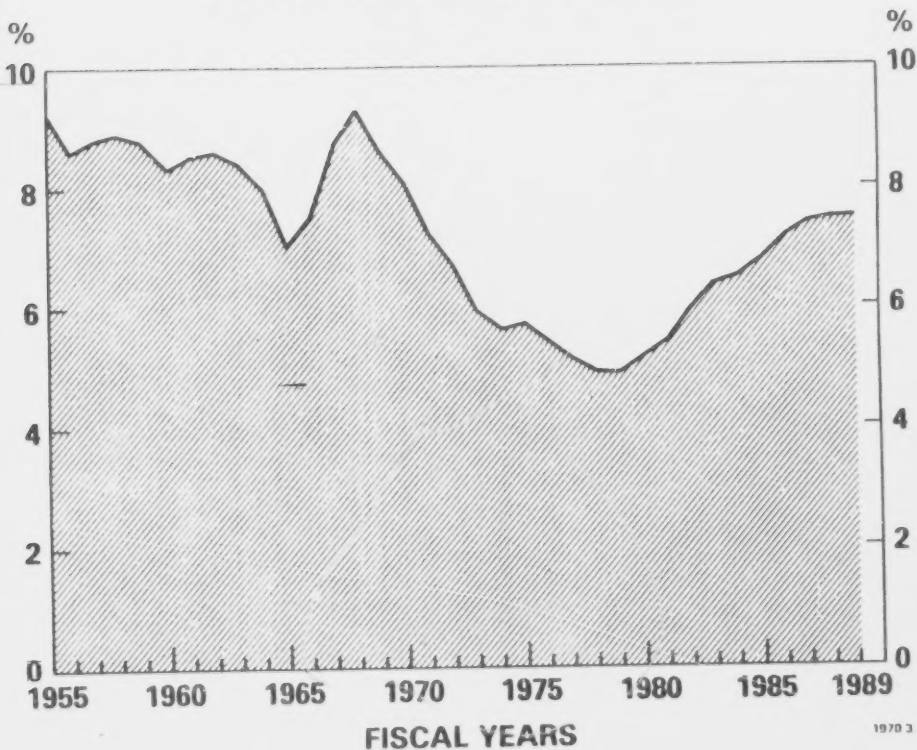
EFFECTS ON THE ECONOMY

The point has been made about what effect all this has on the economy. Here is one of the charts (8) which shows that we have had as a share of the gross national product gone as high as 9.5 percent in the sixties for defense. That value took a long steady decline clear into the trough until 1980 when this administration

began in 1981, before it started back up again. Even now, with the 1985 budget, which some say is too large, it is only 6.8 percent of our gross national product. Even at the end of the decade, if the President's program is fully carried out, it would never be as high as 8. It will only be approximately 7 percent or 7.5 percent of the gross national product.

Chart 8

DEFENSE OUTLAYS AS A SHARE OF GNP

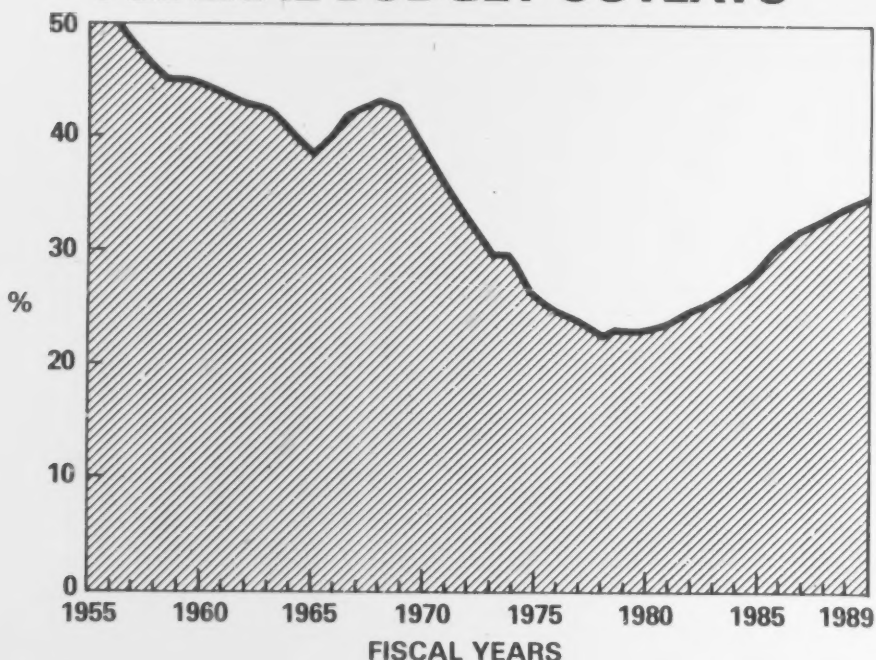


The same is true with respect to the Department of Defense's share of the Federal budget (chart 9). Back in the fifties, of course, it was well above 50 percent. In the sixties, it was about 45 to 46 percent. A long steady decline then, all the way down through the decade of the seventies brought us down in the trough in 1980. We started back up again. But observe, Mr. Chairman, even again this very large—as it is always called—1985 budget is less than 30 percent of the total Federal budget. And it will not go to more than 33.7 percent of the Federal budget, even by 1989. So, you will not have more than a third of the budget for national defense. With half of that going for personnel, it is quite apparent, first of all, that it is not going to have that much impact on the deficit as a whole and, secondly, that we have to spend a very substantial

amount before we get any kind of increase in the military strength necessary to maintain deterrence.

Chart 9

DOD SHARE OF FEDERAL BUDGET OUTLAYS



Here is the point that you were making, Mr. Chairman (chart 10). During this decade of the seventies, the national defense went down 19 percent. If you just take the Department, it went down about 21 percent. We regained about 22 percent, that is a 22 percent increase during the three years that you I have before you, 1981 to 1983. That is about 7 percent a year. But for the whole period, for 1970 to 1983, there was only a 3 percent real increase, measured by outlays in national defense. All other Federal agencies, however, were having a very substantial increase, 88 percent during the decade of the seventies. When defense was going down 20 percent, all the other Federal expenditures were going up 86 percent. In 1981 to 1983, that 3-year period during this administration Federal spending—nondefense spending—still went up. It went up at a much lower rate. It went up at 7 percent. But it was not cut, as so many say. And then for the whole period, 1970 to 1983, it was 106 percent. Some of you may wonder about the difference in figures, but the period 1980 to 1981 is not in that latter point there, 106 percent increase in the Federal budget.

Chart 10

**COMPARISON OF
PUBLIC SPENDING TRENDS
OUTLAYS
(PERCENT CHANGE)**

FISCAL YEAR	NATIONAL DEFENSE	ALL OTHER FEDERAL	STATE & LOCAL
1970-1980	-19%	+ 88%	+30%
1981-1983	+22%	+ 7%	+ 1%
1970-1983	+ 3%	+106%	+32%

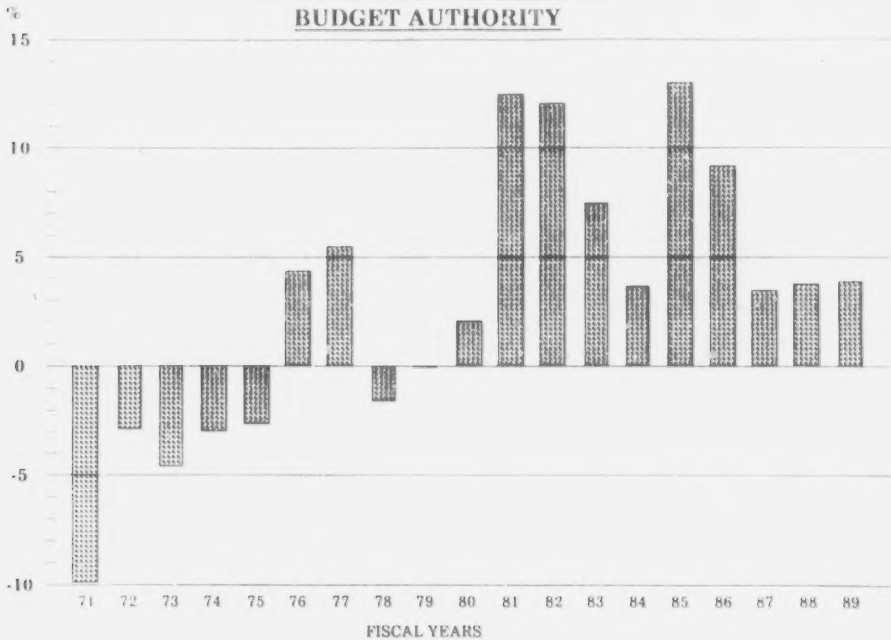
State and local budgets meanwhile were going up 30 percent in the decade of the seventies. It slowed down and stayed about even in the 1981 to 1983 period. But over the whole period, those budgets went up 32 percent.

DEFENSE HAS 5 YEARS OF MAJOR DECLINES

These are the bars that show what really happened to defense during that period from 1971 (chart 11). There were 5 years of major declines in a row. There was an attempt at recovery in 1976 and 1977's budgets that had been made up the previous years. These amounted to about less than 5 percent. Then we started on the decline again. It was not until 1981 that they finally started regaining the kind of strength that is necessary, and the necessity of making up for those long years of negative growth at a time when the Soviets were under no such constraints and were adding enormously to their strength. Bear in mind the decade in which we were neglective insofar as defense spending is concerned was the second decade of the Soviet expansion. The chart indicate the rates of growth that we anticipate for the balance of the decade. Notice that 1985 is indeed high. But that is because 1984 was so very low. And the 1984 budget was cut. It was not cut 5 percent from what the President requested. It did not provide for 5 percent real growth. What it provided was 3.8 percent if you pass the supplementals that are before you. So, there was a major reduction in authority that year. Naturally, the 1985 budget has to be a lot higher than we would like. We can get back to the original plan of the President in 1986. And then these three years out here, 1987, 1988, and 1989 'can be level at about 3.5 percent growth.

Chart 11

**REAL GROWTH IN DEFENSE
BUDGET AUTHORITY**



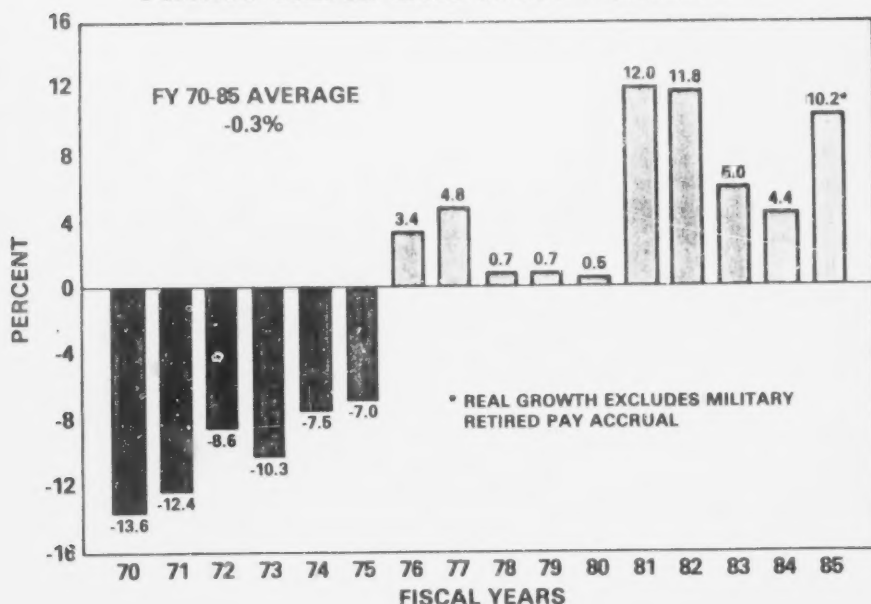
THE PRICE OF NEGLECT IS EXTREMELY HIGH

This is what the effect was on just one of the services, Mr. Chairman. You see here the Army (chart 12). During this whole period of the seventies it had declines of the kind indicated: minus 13 percent, minus 12, minus 8, minus 10, and 2 years at minus 7 each. That is 6 straight years of negative growth on a very major scale for the Army. No wonder it was a hollow Army in 1981, as the Chief of Staff said. We had some efforts at recovery in 1976 and 1977, and then back to practically level at zero during the remaining years of that decade. And only in 1981 did we start going back up again with 12 and 11 percent increases respectively.

The 1984 budget provided only a 4-percent increase for the Army. We have requested 10 percent this year in the 1985 budget and again in 1987 and 1989 we will be able to level that down.

Chart 12

ARMY REAL GROWTH TRENDS

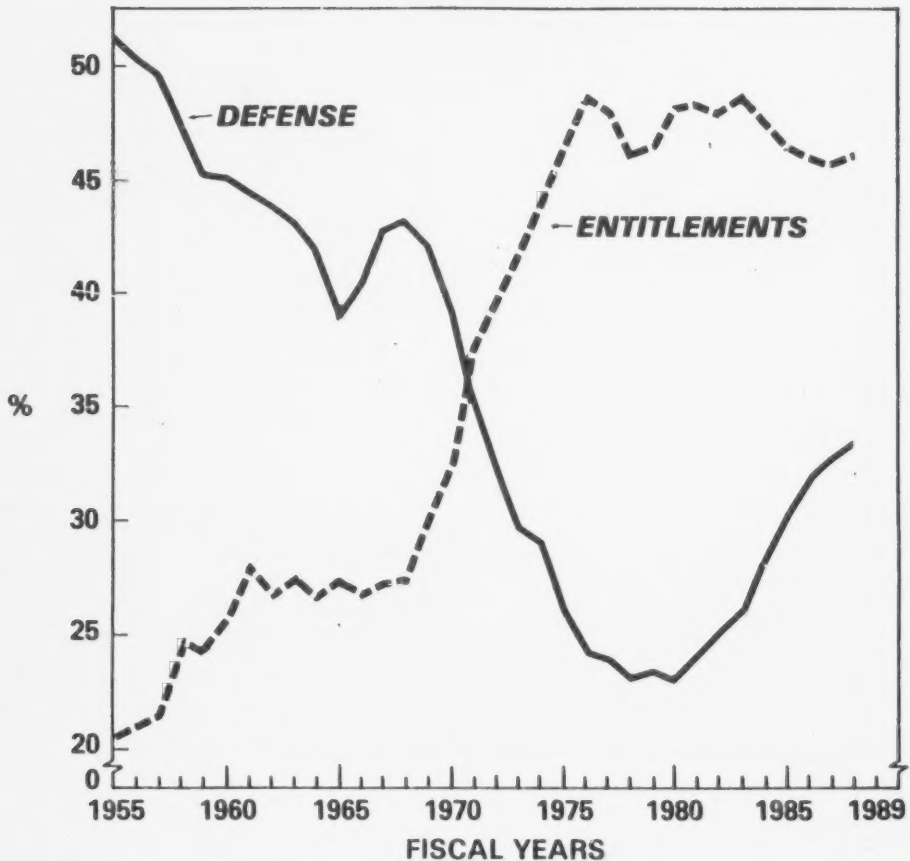


But the price of neglect is extremely high. It is even higher and more dangerous when you are in a period when the principal potential opponent is adding enormously to its strength.

Chart 13 is the one we call the X chart. It shows the shares of the budget that have been allocated to defense and to entitlements. Again, it is another way of displaying what happened to us during that period of the seventies during which we witnessed a long, almost precipitous decline down to a point barely over 20 percent, about 22 percent of the budget. It started back up again in the eighties. But look at what happened to entitlements. They went up in a virtual straight line and approached 48 percent and then leveled off from 81 to 83. They were not cut. They did not go into any major decline. They leveled off as a share of the total budget. As actual dollars, of course, they kept going up.

Chart 13

SHARES OF THE BUDGET (OUTLAYS)



So, you have that as an indication very clearly of the problems that the security of the country has faced during these years.

SUMMARY OF AUTHORITY AND OUTLAYS

Here is the summary of the authority and outlays for the years, starting back with the year 1981 and running up to the current year (chart 14). You will see the percentage of real growth since 1981, 12 percent when we started to regain our strength, the year you mentioned, Mr. Chairman; 12 percent again in 1982; 1983 back to 7.5; and then down to 3.7 again in 1984 because of the cuts. And this year we request 13-percent real growth in authority.

Chart 14

FY 1985
DEPARTMENT OF DEFENSE BUDGET
FINANCIAL SUMMARY
BUDGET AUTHORITY & OUTLAYS
(CURRENT \$ BILLIONS)

	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985
BUDGET AUTHORITY	178.4	213.8	239.5	258.2	305.0
% REAL GROWTH	12.5	12.1	7.5	3.7	13.0
 OUTLAYS	 156.1	 182.9	 205.0	 231.0	 264.4
% REAL GROWTH	4.7	7.8	7.1	8.8	9.3

Outlays have run relatively constant because, of course, they run behind authority. But the critical factor here is that, when you have cuts as deep as were made in 1984, way below the Budget Committee's resolution and recommendation, then you have to make up for it in subsequent years. The amount of many of those cuts is important. Those cuts involve such things as operations and maintenance and a lot of the other readiness and sustainability measures which meant that, while we were not cutting back major weapons systems, we were putting ourselves in a situation in which we were spreading out the period of time in which we were able to regain our strength. That sounds very well on paper; but the simple fact of the matter is it means that all the things that everybody knows we have to get and, votes that we have to get through the authority of previous years, is going to cost us a great deal more. All of these requirements will be delayed. In a kind of world in which we do not know really how much time we have, I can only feel that it increases substantially the dangers and the risks.

These are the longer range forecasts (chart 15). Again, these are the direct way of presenting through figures the hopes that we have for the rest of the decade. In fact, these increases can go down very substantially in 1987, 1988, and 1989 if we can regain the strength we need this year and hold it next year.

Chart 15

FY 1985 DEPARTMENT OF DEFENSE BUDGET LONG RANGE FORECASTS

BA (\$ BILLIONS)	1984	1985	1986	1987	1988	1989
MILITARY RETIRED PAY*	16.6	17.6	19.4	20.9	22.5	24.0
OTHER MILITARY FUNCTIONS	241.6	287.4	330.2	358.3	389.0	422.1
TOTAL, CURRENT PRICES	258.2	305.0	349.6	379.2	411.5	446.1
TOTAL, CONSTANT (1985) PRICES	269.9	305.0	333.0	344.7	357.9	371.7
PERCENT CHANGE	3.7%	13.0%	9.2%	3.5%	3.8%	3.9%
OUTLAYS (\$ BILLIONS)						
MILITARY RETIRED PAY*	16.8	17.4	19.3	20.9	22.5	23.9
OTHER MILITARY FUNCTIONS	214.2	247.0	282.5	318.3	347.3	374.9
TOTAL, CURRENT PRICES	231.0	264.4	301.8	339.2	369.8	398.8
TOTAL, CONSTANT (1985) PRICES	241.8	264.4	286.7	306.8	319.5	330.1
PERCENT CHANGE	8.8%	9.3%	8.4%	7.0%	4.1%	3.3%
COMPOSITE PAY/PRICE ASSUMPTIONS FOR OUTLAYS (FY1985 = 100%)						
	95.5	100.0	105.3	110.6	115.8	120.9

* RETIRED PAY IS ON A CASH BASIS IN FY 1984 AND ON AN ACCRUAL BASIS THEREAFTER.

The bottom line, the composite price assumption, the inflation assumptions, including the special defense deflator that we use, because we cost certain weapons systems at a higher rate of inflation than is used for the Government as a whole. These are very low inflation assumptions because we have been very fortunate, lucky, or skillful—however you want to phrase it—in getting inflation down. That has enabled us to get a great deal more defense for the dollars that have been appropriated.

SIGNIFICANT ACCOMPLISHMENTS PRODUCED

All of this has produced some very significant accomplishments (chart 16). This is in a sense what it has bought, increased readiness, greatly increased mobility in a world in which we may have to move very far very fast and without much notice, and a substantial amount of modernization. In the ground forces, there are 2,360 tanks, tanks that finally, Mr. Chairman, after a decade or more of knowing that if we had to go to war we would have to send our people to war in tanks that we knew were inferior to the Soviets; and now we have one that we know is superior. But it has taken much too long to get it. And we are well started on the acquisition of the amounts we need.

Chart 15

SIGNIFICANT ACCOMPLISHMENTS BY THE REAGAN ADMINISTRATION

READINESS:

- AIR FORCE AIRCREW FLYING HOURS HAVE RISEN FROM 16 HOURS PER MONTH IN FY 1981 TO OVER 19 EXPECTED IN FY 1984.
- SHIP STEAMING HOURS WILL BE ALMOST 8% HIGHER IN FY 1984 THAN IN FY 1981.

MOBILITY:

- | | |
|-------------------|---|
| AIRLIFT CAPACITY: | WE HAVE FUNDED 5 C-5 CARGO PLANES AND 22 KC-10 CARGO/TANKER AIRCRAFT. |
| SEALIFT CAPACITY: | WE HAVE ADDED 8 SL-7 CONTAINER SHIPS. |

MODERNIZATION—CONVENTIONAL FORCES:

- | | |
|----------------------|--|
| GROUND FORCES: | FROM FY 1982-1984, WE HAVE FUNDED 2,360 M-1 ABRAMS TANKS, 1,800 BRADLEY FIGHTING VEHICLE SYSTEMS AND 466 LIGHT ARMORED VEHICLES. |
| TACTICAL AIR FORCES: | DURING FY 1982-1984, THE AIR FORCE HAS FUNDED 111 F-15 AND 384 F-16 FIGHTER AIRCRAFT. |
| NAVAL FORCES: | IN 1981, OUR DEPLOYABLE BATTLE FORCE NUMBERED 479 SHIPS. BY THE END OF FY 1984, IT WILL HAVE GROWN TO 525 SHIPS. |

MODERNIZATION—STRATEGIC FORCES:

- WE HAVE DEPLOYED 3 TRIDENT-CLASS SUBMARINES AND FUNDED 8 MORE THROUGH FY 1984.
- WE HAVE PROCEEDED WITH DEVELOPMENT OF THE TRIDENT II MISSILE AS WE COMPLETED PROCUREMENT OF TRIDENT I MISSILES.
- PRELIMINARY WORK ON SMALL ICBM HAS BEEN FUNDED CONSISTENT WITH SCROWCRAFT COMMISSION RECOMMENDATIONS.
- WE HAVE FUNDED PROCUREMENT OF 18 B-1 BOMBERS THROUGH FY 1984.
- WE HAVE BEGUN DEPLOYMENT OF THE B-52 BOMBER FLEET FOR CRUISE MISSILE CAPABILITY.
- SIGNIFICANT PROGRESS ACCOMPLISHED IN UP-GRADING STRATEGIC COMMUNICATION AND CONTROL SYSTEMS.

Tactical air forces have funded the 111 F-15's and 384 F-16's, among other things. These are a few of the highlights. The naval forces have worked up from falling all the way back to 479 ships up to a point where we are on the path and pattern that will bring us to 600 ships for the Navy we need by the early 1990's or by the end of the decade.

On modernization, we have kept pace also. We have the three new Trident submarines which by 1989 will all start getting the more capable D-5 missile which for the first time will have the accuracy and the yield to destroy the Soviet hardened targets. We have begun work on the small single warhead ICBM that is consistent with the Scowcroft Commission recommendation.

At the same time, we are moving ahead, as the Congress has authorized, on the two new bombers. We have begun deployment of the most modern of the B-52's for cruise missile carriage capability and made a lot of progress in upgrading our communication, command and control systems, which in many ways is the most important part of the strategic modernization.

INSPECTOR GENERAL'S OFFICE CREATED

Then we have had a great many management improvements, ways of acquiring the products that we need and ways in which we can do this more economically (chart 17). We created the inspector general's office, who is conducting a very large number of audits and investigations.

Chart 17

MANAGEMENT IMPROVEMENTS

CREATION OF INSPECTOR GENERAL (IG)

AUDITS
INVESTIGATIONS

TEN-POINT SPARE PARTS PROGRAM

AUDITS
ADMINISTRATIVE, LEGAL, CONTRACTUAL EFFORTS

ACQUISITION IMPROVEMENT PROGRAM (AIP)

PROGRAM STABILITY
MULTI-YEAR PROCUREMENT
ECONOMIC PRODUCTION RATES
REALISTIC BUDGETING
IMPROVED READINESS AND SUPPORT
INCREASED COMPETITION

ENHANCED DECISION-MAKING PROCESS

SERVICE SECRETARIES
JCS

REFORM '88 AND THE GRACE COMMISSION

A lot has been said and said properly about the spare parts problem. Because it has, I would like to address the programs that we

have instituted to permanently correct the problem. The important but frustrating fact to bear in mind about this, Mr. Chairman, is that all of the spare parts problem was discovered by us, was uncovered by us in our own audits, and was publicized by us, against, I might say, the advice of some people in the department who thought it would be a bad story and we should not do anything to publicize it. It seemed to me it was a bad story but it should be publicized. But, that most of all, we should do something about it.

All we have heard so far are the rather cheap and demagogic statements about \$900 clawhammers and similar items, without any counterbalancing indication of what has been done to prevent it, and prevent it happening in the future, or how it happened in the first place. There were perhaps two reasons mainly and one more minor reason why it happened in the first place. And that was that a lot of the procurement people had been accustomed to buying simply by catalog number and not by title. So, it did not seem so horrendous to them when they paid \$900 for a catalog-numbered item, A5604, which turned out to be a clawhammer. Now we do it by title, and it obviously will be very much more apparent.

We have established incentives for people who find cost savings. We have paid bonuses to people who have saved us millions of dollars by being alert and watching for this thing a great deal more carefully, and taking disciplinary action against those who have not.

We found instances where items were ordered by part number only. It is easier to pay \$400 for a catalog-numbered item than it is to pay \$400 for a clawhammer which is what that number might represent.

This is being corrected, but most important, we are improving our contracts. We found that a few large weapon systems contracts required that certain spare parts purchases be made only from the weapon system supplier. They were contracts which, in effect, gave a spare parts monopoly and a total franchise to the people who furnished the major weapons systems to furnish the spare parts. We could not go elsewhere.

Of course, as everyone knows, with these large systems, you cannot get along without spare parts. So, we had a very difficult contractual situation. That was what caused much of this problem. We have corrected that in our newer contracts. One of the contracts where this is most apparent, is the fighter aircraft engine contract that was awarded last week. There, both of the contractors, because it was in our specification, provided that they would not retain proprietary rights to the spare parts. They would indeed design the product so that the spare parts could be furnished by subcontractors, and they would be competitive. We are free to get spare parts from subcontractors at the lowest possible price. Further, the contract will provide for the acquisition of a large number of spare parts at the beginning.

So, most of these problems have been solved. We have one other thing going. That is the largest audit in the Department's history. Some 400 auditors are looking through all of the older contracts, and any new ones to see if any other situations require improve-

ment. If there are, they will, of course, be corrected, as we have corrected the ones we previously found.

So, while the public is quite right and you are quite right, to be exercised and outraged by these prices, you have no monopoly on that. We were too, and we were the ones who found it, and we were the ones who have taken the steps to do something about it.

REFUNDS HAVE BEEN MADE

And, Mr. Chairman, there is a footnote to the whole thing, though, again, it is largely unpublicized, have already received very substantial refunds from a number of companies who charged these prices. The interesting thing about this is that these companies did not have to give us refunds. They were not legally bound to do it. But, they are making refunds and we believe that we have taken the steps that will prevent the need for refunds in the future.

I would suggest that we will, hopefully, all pay a great deal more attention to the steps that have been taken to correct the problem rather than continually beating the dead horse of the fact that we did indeed initially pay, \$400 for a clawhammer. This is only one area of acquisition improvement, but it is the one in which there has been the most attention and the one that I wanted to talk to you about specifically today.

Chairman DOMENICI. You say that the refunds have been more or less voluntary?

Secretary WEINBERGER. Yes.

Chairman DOMENICI. Have there been any disciplinary actions taken?

Secretary WEINBERGER. Yes, there have. There have been procurement officers who have been dismissed and procurement officers who have been disciplined.

AUDITS ARE BEING MADE

Also, here is a statistical list of some of the audits that we have been making and are continuing to make (chart 18). We have 18,000 reports, with a potential savings of \$1.6 billion in the internal management of the program. We are also getting a lot of fines, a lot of convictions, indictments, people going to jail, through a joint program we have established with the Department of Justice.

ACTIVITIES TO CURB WASTE, FRAUD AND ABUSE

AUDITS OF INTERNAL MANAGEMENT OF DEFENSE OPERATIONS AND PROGRAMS

18,467 REPORTS

POTENTIAL SAVINGS: \$1.6 BILLION

INVESTIGATIVE CASES

16,357 CASES CLOSED

8,023 CASES REFERRED FOR PROSECUTION OR ADMINISTRATIVE ACTION

657 CONVICTIONS

**FINES, PENALTIES, RESTITUTIONS, AND RECOVERIES COLLECTED FROM
REFERRALS TO:**

JUSTICE DEPARTMENT: \$5.2 MILLION

MILITARY DEPARTMENTS: \$9.6 MILLION

DCAA AUDITS

57,782 REPORTS

\$28.6 BILLION IN CONTRACT COSTS QUESTIONED — \$9.1 BILLION SUSTAINED

We also have some 57,000 reports from our contract auditors these have resulted in some \$28 billion in contract costs being questioned. Nine billion dollars of this has been sustained and represent savings, either in new contracts or in contracts that have been executed in which we found errors in the way they were being administered and regained that amount for the Government.

So, these are the things we are doing on the management side, in addition to multiyear procurement and most economic rate of production, and things like that to bring the cost of this enormously expensive program down as far as we can. None of this changes the basic necessity that, faced with the kind of situation we are, faced with the kind of opponent that we have, and their unlimited ability to add military resources on a huge scale year after year, these are the things which drive the Defense Department, these and the personnel costs and the necessity of maintaining the progress of a recovery program.

It is the starting and stopping that cost so much more. And that is why we were so concerned with the reductions far below what the Budget Committee itself recommended last year. And that is why it is so essential for us to regain, as much as we can, the most economic way to acquire the things that we need. And that, of course, is why the 1985 budget is as high as it is; that and the unremitting continuing efforts of the Soviets to acquire more and more of both strategic and conventional weapons.

Thank you very much, sir.

Chairman DOMENICI. Thank you, Mr. Secretary.

[The prepared statement of Secretary Weinberger follows:]

STATEMENT OF
THE SECRETARY OF DEFENSE
CASPAR W. WEINBERGER

BEFORE THE
SENATE BUDGET COMMITTEE

IN CONNECTION WITH
THE FISCAL YEAR 1985 BUDGET FOR
THE DEPARTMENT OF DEFENSE

FEBRUARY 6, 1984

STATEMENT OF THE SECRETARY OF DEFENSE, CASPAR W. WEINBERGER

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE.

THANK YOU FOR PROVIDING ME THE OPPORTUNITY TO DISCUSS THE FY 1985 DEFENSE PROGRAM. THIS IS THE FOURTH DEFENSE BUDGET THAT I HAVE PRESENTED TO THIS COMMITTEE. AND IN MANY WAYS IT IS THE MOST IMPORTANT, FOR IT IS THIS BUDGET THAT WILL INDICATE TO FRIEND AND FOE ALIKE THAT WE INTEND TO KEEP THE U.S. DEFENSE PROGRAM ON THE BALANCED AND PRUDENT COURSE THAT WAS SET THREE YEARS AGO.

THE DEFENSE PROGRAM THAT I SPEAK ABOUT TODAY IS THE RESULT OF DETAILED PLANNING, PROGRAMING AND BUDGETING EFFORTS WITHIN THE DEPARTMENT OF DEFENSE. PLEASE NOTICE THAT BUDGETING IS THE LAST PHASE OF OUR INTERNAL PROCESS OF PROGRAM EVOLUTION. PRIMARY TO THE DEVELOPMENT OF DEFENSE REQUIREMENTS IS THE DETERMINATION OF OUR NATIONAL SECURITY OBJECTIVES, THE MILITARY THREATS TO SUCCESSFUL ACCOMPLISHMENT OF THOSE OBJECTIVES, THE BEST STRATEGY TO COUNTER THOSE THREATS, AND THE FORCES REQUIRED TO IMPLEMENT THAT STRATEGY. ONCE THIS PROCESS HAS BEEN COMPLETED, THE LATEST COSTS ARE APPLIED TO THE RESULTING REQUIREMENTS. THE BUDGET BEFORE YOU REQUESTS \$305 BILLION IN BUDGET AUTHORITY FOR THE DEPARTMENT OF DEFENSE. IT IS OUR BELIEF THAT THE PROGRAM PROVIDED FOR IN THE FY 1985 BUDGET WILL CREATE A MODERN AND BALANCED FORCE, ARMED WITH ADVANCED WEAPON

SYSTEMS, MAINTAINED AT THE HIGHEST STATE OF MANPOWER AND MATERIAL READINESS, AND PREPARED FOR SUSTAINED COMBAT OPERATIONS IN LOCATIONS THROUGHOUT THE WORLD.

AS PRESIDENT REAGAN SAID IN HIS STATE OF THE UNION ADDRESS, "THE UNITED STATES IS SAFER, STRONGER, AND MORE SECURE IN 1984." OUR PROGRAM TO RESTORE AMERICA'S DEFENSES IS WORKING. FIRM LEADERSHIP HAS KEPT US STEADY ON OUR COURSE TO PRESERVE PEACE WHERE IT EXISTS AND TO RESTORE IT WHERE WE CAN. ONE OF OUR TOUGHEST CHALLENGES TODAY STEMS FROM THE SITUATION IN LEBANON. OUR EFFORT THERE IS DEDICATED TO FREEING THAT COUNTRY OF ALL FOREIGN FORCES AND HELPING TO RESTORE ITS SOVEREIGNTY SO AS TO BUILD THE FOUNDATION OF A SECURE PEACE. WE ARE RESOLVED TO STAY THE COURSE. WE CANNOT PERMIT TERRORISM TO SUCCEED; WE CANNOT LET THOSE WHO PROMOTE TERRORISM TO TRIUMPH AGAINST THE WISHES OF THE VAST MAJORITY OF THE PEOPLE.

WHEN THE SAFETY OF AMERICAN CITIZENS IN GRENADA WAS THREATENED, OUR ARMED FORCES DEMONSTRATED THAT THEY WERE ONCE AGAIN CAPABLE OF RESPONDING QUICKLY AND DECISIVELY IN A CRISIS. WITH LESS THAN FORTY-EIGHT HOURS NOTICE, OUR FORCES SECURED THE SAFE DEPARTURE OF MORE THAN 800 AMERICAN CITIZENS AND RESTORED THAT ISLAND NATION'S HOPE FOR DEMOCRACY AND PROGRESS.

AS THE SOVIETS MOUNTED A "PEACE OFFENSIVE" IN EUROPE, EVEN WHILE THEY REFUSED TO ACCEPT A NEGOTIATED SOLUTION TO THE THREAT POSED BY THEIR SS-20 MISSILE MONOPOLY, WE DEMONSTRATED THE UNITY

AND STAYING POWER OF THE NATO ALLIANCE. OUR ALLIES, ACTING THROUGH THEIR DEMOCRATICALLY-ELECTED LEGISLATURES, STOOD FIRM IN THEIR DECISION TO DEPLOY PERSHING II AND GROUND-LAUNCHED CRUISE MISSILES, AND IN THEIR DETERMINATION TO CONTINUE TO SEEK A NEGOTIATED ALTERNATIVE.

AS THIS CONGRESS DEBATED THE FUTURE OF OUR LAND-BASED STRATEGIC FORCES, WE DEMONSTRATED THE DURABILITY OF OUR BIPARTISAN CONSENSUS TO STRENGTHEN AMERICA'S DEFENSES. WITH THE ABLE HELP OF THE BIPARTISAN COMMISSION ON STRATEGIC FORCES, CONGRESS AND THE PRESIDENT REACHED AGREEMENT ON THE FUTURE OF OUR LAND-BASED STRATEGIC FORCES, AND MAPPED OUT A STRATEGY FOR ACHIEVING GENUINE, SIGNIFICANT, VERIFIABLE ARMS REDUCTIONS. WE ALSO HAVE BEGUN TO ADVANCE THE TECHNOLOGY FOR AN EFFECTIVE DEFENSE AGAINST BALLISTIC MISSILES. SUCH A DEFENSE MAY OFFER US THE OPPORTUNITY TO STRENGTHEN DETERRENCE AND TO REDUCE THE THREAT OF MISSILE ATTACK.

AND FINALLY, THANKS TO THE BIPARTISAN SUPPORT OF CONGRESS, AND IN PARTICULAR THE SUPPORT OF MANY OF YOU ON THIS COMMITTEE, WE HAVE SEEN A COMPLETE TURNAROUND IN THE QUALITY OF OUR ARMED FORCES. SOME OF YOU WILL REMEMBER THAT, AS ONE OF MY FIRST ACTS THREE YEARS AGO, I CAME TO YOU AND ASKED FOR ADDITIONAL FUNDS TO REDRESS THE COMPENSATION OF OUR SERVICEMEN AND WOMEN. MANY OF YOU, RECOGNIZING THE URGENT NEED TO REVITALIZE MORALE AND READINESS THROUGHOUT THE RANKS OF OUR ARMED FORCES, ASKED THEN WHETHER WE SHOULD RETURN TO THE DRAFT IMMEDIATELY, BEFORE THE

ALL-VOLUNTEER FORCE COLLAPSED COMPLETELY. BUT YOU APPROVED THE FUNDS WE REQUESTED, AND TODAY -- LESS THAN THREE YEARS LATER -- OUR ARMED FORCES HAVE UNDERGONE A DRAMATIC REVITALIZATION.

-- DURING THE PAST YEAR ALL SERVICES MET OR EXCEEDED THEIR RECRUITING OBJECTIVES.

-- THE QUALITY OF THOSE RECRUITS IS FAR HIGHER; FROM 68 PERCENT HIGH SCHOOL GRADUATES IN 1980 TO 91 PERCENT THIS PAST YEAR.

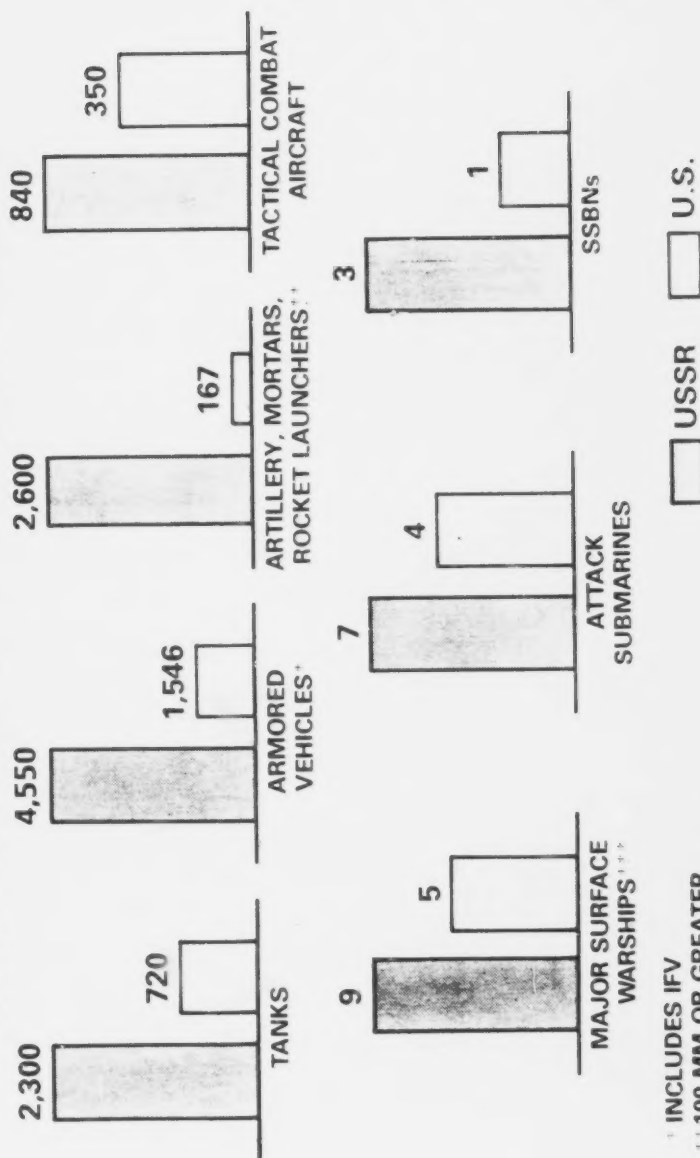
-- RETENTION ROSE IN THAT SAME PERIOD FROM 55 PERCENT TO 68 PERCENT, WITH THE AIR FORCE AND NAVY HAVING THEIR BEST YEAR FOR REENLISTMENTS IN 1983.

-- AND THE GUARD AND RESERVES SHARE IN THE IMPROVEMENTS; THE SELECTED RESERVES ROSE ABOVE ONE MILLION FOR THE FIRST TIME SINCE 1961 WITH ACCESSION QUALITY IMPROVEMENTS COMPARABLE TO THE ACTIVE FORCES.

-- HOWEVER, AS THE ECONOMY CONTINUES TO IMPROVE AND DOMESTIC UNEMPLOYMENT DECLINES, WE MUST ENSURE THAT MILITARY COMPENSATION REMAINS COMPETITIVE SO THAT THE RECRUITING AND RETENTION GAINS MADE OVER THE PAST FEW YEARS ARE NOT REVERSED.

THE DEPARTMENT'S CIVILIAN WORKFORCE HAS MADE AN ESSENTIAL CONTRIBUTION TO MILITARY READINESS. THE CIVILIAN EMPLOYEES OF

A COMPARISON OF AVERAGE ANNUAL SOVIET PRODUCTION AND FY 1985 U.S. REQUESTS



* INCLUDES IFV

** 100 MM OR GREATER

*** INCLUDES BATTLESHIP REACTIVATION

STRATEGIC SYSTEMS

	SALT I		SALT II	
	1980	1975	1970	1960
UNITED STATES				
BOMBERS, CRUISE MISSILES				
INTER-CONTINENTAL BALLISTIC MISSILES				
SUBMARINE-LAUNCHED BALLISTIC MISSILES				
BALLISTIC MISSILE SUBMARINES				
SOVIET UNION				
BOMBERS, CRUISE MISSILES				
INTER-CONTINENTAL BALLISTIC MISSILES				
SUBMARINE-LAUNCHED BALLISTIC MISSILES				
BALLISTIC MISSILE SUBMARINES				

THE MILITARY SERVICES AND DEFENSE AGENCIES PROVIDE DEPOT MAINTENANCE, RESEARCH AND DEVELOPMENT, AND BASE OPERATIONS SUPPORT FOR OUR ARMED FORCES. THE DEFENSE AGENCIES, BASICALLY CIVILIAN ORGANIZATIONS, ELIMINATE THE NEED FOR REDUNDANT OVERHEAD ORGANIZATIONS IN THE SERVICES WHILE SUPPLYING EFFECTIVE AND ECONOMICAL SUPPORT.

AS WE MEASURE ACHIEVEMENTS OF THE PAST, WE ALSO MUST TAKE STOCK OF THE CHALLENGES OF THE FUTURE. FOR WE CONTINUE TO FACE THREE SOBERING FACTS ABOUT THE SOVIET UNION.

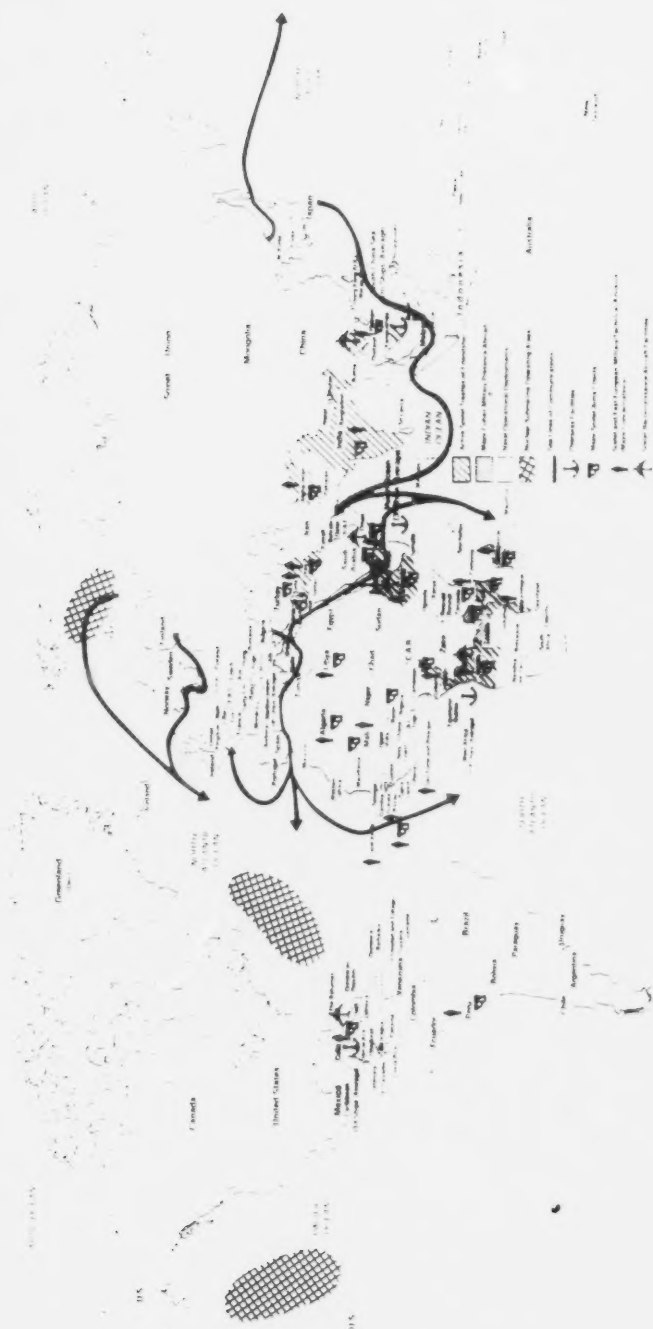
(CHART 1: U.S./USSR COMPARISON OF CONVENTIONAL WEAPONS PRODUCTION)

-- THE SOVIET MILITARY BUILDUP, BOTH QUANTITATIVE AND QUALITATIVE, HAS PRODUCED A MAJOR SHIFT IN THE NUCLEAR AND CONVENTIONAL BALANCE.

(CHART 2: U.S./USSR COMPARISON OF STRATEGIC WEAPONS)

-- SOVIET MILITARY POSTURE HAS BECOME INCREASINGLY OFFENSIVE IN ORIENTATION. THEIR WEAPON SYSTEMS, TACTICS AND TRAINING, CHEMICAL WARFARE OPERATIONS, AND ORGANIZATIONAL CHANGES GIVE THEM GREATER CAPABILITY TO CARRY OUT AN OFFENSIVE STRATEGY.

SOVIET GLOBAL POWER PROJECTIONS



(CHART 3: POWER PROJECTION MAP)

-- THE SOVIETS HAVE EXPANDED THE GLOBAL REACH OF THEIR MILITARY FORCES, ENHANCING THEIR ABILITY TO PROJECT INFLUENCE AND POWER, ESPECIALLY IN THE THIRD WORLD. LARGER NUMBERS OF ADVISORS, EXPANDED FOREIGN MILITARY SALES, AND INCREASES IN NAVAL PORT VISITS, ALL POINT TO GREATER SOVIET MILITARY INVOLVEMENT THROUGHOUT THE WORLD. FURTHERMORE, SOVIET VIOLATIONS OF SEVERAL ARMS CONTROL AGREEMENTS -- SUCH AS THE BIOLOGICAL WEAPONS CONVENTION AND THE ABM TREATY -- DEMONSTRATE HOW DIFFICULT IT IS TO ENSURE THAT THE SOVIET UNION WILL COMPLY WITH ITS COMMITMENTS. EFFECTIVE VERIFICATION MEASURES ARE ESSENTIAL, BUT -- AS WE HAVE NOW DISCOVERED -- THEY ARE NOT SUFFICIENT TO MAKE ARMS CONTROL SUCCEED.

THE SOVIETS HAVE NOT ONLY ACCUMULATED ENORMOUS MILITARY POWER, THEY HAVE ALSO DEMONSTRATED THEIR WILLINGNESS TO USE THAT POWER TO ACHIEVE THEIR POLITICAL ENDS.

FOR THE UNITED STATES, BY CONTRAST, MILITARY STRENGTH WILL NEVER BE AN END IN ITSELF; NOR WILL MILITARY STRENGTH ALONE GIVE US THE MEANS TO ACHIEVE OUR ENDS. THE FREEDOM AND PROSPERITY WE SEEK FOR OURSELVES AND ALL NATIONS CANNOT BE CREATED OR IMPOSED BY FORCE -- ALTHOUGH THEY CAN BE DESTROYED.

THE CORNERSTONE OF OUR STRATEGY, THEREFORE, REMAINS DETERRENCE, THAT IS, CONVINCING ANY POTENTIAL ADVERSARY THAT THE COST OF AGGRESSION WOULD BE TOO HIGH TO JUSTIFY AN ATTACK. OUR STRATEGY IS DEFENSIVE IN ORIENTATION BUT IF DETERRENCE SHOULD FAIL, WE MUST BE WILLING TO FIGHT TO RESTORE PEACE ON FAVORABLE TERMS.

IN IMPLEMENTING THIS STRATEGY, WE NEED A REALISTIC VIEW OF THE THREATS WE FACE. BUT LET US ALSO RECOGNIZE THAT WE HAVE GREAT STRENGTHS THAT OUR ADVERSARIES CANNOT DRAW UPON. OUR ALLIANCES ARE MORE ROBUST, SINCE OUR ALLIES JOIN US WILLINGLY, WHILE THE SOVIET UNION GUARANTEES LOYALTY BY MENACING ITS "FRIENDS." OUR TROOPS ARE MORE HIGHLY MOTIVATED, FOR OUR FORCES DEFEND FREEDOMS THE SOVIET UNION AND ITS ALLIES DENY TO THEIR OWN CITIZENS. FREE ENTERPRISE AND INNOVATION HAVE GIVEN OUR MILITARY FORCES A TECHNOLOGICAL EDGE. AND FINALLY, WITH A FLEXIBLE STRATEGY WE CAN EFFECTIVELY DETER AGGRESSION IN MANY AREAS WITHOUT HAVING TO MAINTAIN SIGNIFICANT LEVELS OF FORCES IN ALL OF THEM SIMULTANEOUSLY.

BUT WE CANNOT DEPEND ON THE STRENGTH OF OUR FRIENDS AND ALLIES IF WE ARE NOT WILLING TO MAINTAIN OUR OWN DEFENSE EFFORT, OR OUR COMMITMENT TO JOINT VENTURES AND SECURITY ASSISTANCE. AND, TO HELP MANY OF OUR FRIENDS TO HELP THEMSELVES, WE HAVE TO PROVIDE ASSISTANCE. IN MANY PARTS OF THE WORLD, SECURITY

ASSISTANCE PROGRAMS ARE THE MOST EFFECTIVE WAY OF STRENGTHENING OUR OWN SECURITY.

WE CANNOT RELY ON THE SUPERIOR QUALITY OF OUR MEN AND WOMEN IN UNIFORM IF WE ARE NOT WILLING TO GIVE THEM THE COMPENSATION THEY DESERVE, OR THE TOOLS THEY NEED TO DO THEIR JOBS. WE CANNOT ASSUME THAT WE WILL KEEP A TECHNOLOGICAL EDGE UNLESS WE CONTINUE DEVELOPING AND MODERNIZING OUR EQUIPMENT AND HALT THE HEMORRHAGE OF TECHNOLOGY TO THE SOVIET UNION. WE CANNOT RETAIN THE BENEFITS OF FLEXIBILITY WITHOUT TRAINING AND EQUIPPING OUR FORCES TO RESPOND TO DIFFERENT CONTINGENCIES. ABOVE ALL, WE CANNOT ESCAPE THE RESPONSIBILITY OF RETAINING FORCES OF SUFFICIENT SIZE AND QUALITY TO MAKE OUR DETERRENT CREDIBLE AT ALL LEVELS OF CONFLICT.

UNFORTUNATELY, DURING THE 1970s THE UNITED STATES NEGLECTED THOSE STRENGTHS AT THE VERY TIME THAT THE SOVIETS WERE COMPENSATING FOR THEIR OWN WEAKNESSES. WHILE THE SOVIETS WERE CONTINUING TO WIDEN THE QUANTITATIVE GAP IN WEAPONS, THEY WERE ALSO DEVOTING AN INCREASING PORTION OF THEIR MILITARY SPENDING TO RESEARCH AND DEVELOPMENT AND PROCUREMENT TO ACHIEVE A QUALITATIVE IMPROVEMENT IN THEIR MILITARY HARDWARE.

WHEN THIS ADMINISTRATION TOOK OFFICE WE HAD TO CONFRONT SOME SERIOUS DIFFICULTIES IN OUR MILITARY POSTURE. ANY ONE OF THE PROBLEMS WE FACED -- LOW LEVELS OF READINESS AND SUSTAINABILITY, DIFFICULTY IN RECRUITING AND RETAINING QUALIFIED PERSONNEL,

SIGNIFICANT ACCOMPLISHMENTS BY THE REAGAN ADMINISTRATION

READINESS:

IMPROVEMENTS IN THE LEVEL AND QUALITY OF TRAINING CONTRIBUTED TO READINESS GAINS.

AIR FORCE AIRCREW FLYING HOURS HAVE RISEN FROM 16 HOURS PER MONTH IN FY 1981 TO OVER 19 EXPECTED IN FY 1984.

SHIP STEAMING HOURS WILL BE ALMOST 8% HIGHER IN FY 1984 THAN IN FY 1981.

MOBILITY:

AIRLIFT CAPACITY: WE HAVE FUNDED 5 C-5 CARGO PLANES AND 20 KC-10 CARGO/TANKER AIRCRAFT.

SEALIFT CAPACITY: WE HAVE ADDED 8 SL-7 CONTAINER SHIPS AND 13 TAKX CARGO SHIPS.

MODERNIZATION - CONVENTIONAL FORCES:

GROUND FORCES: FROM FY 1982-1984, WE HAVE FUNDED 2,360 M-1 ABRAMS TANKS, 1,800 BRADLEY FIGHTING VEHICLE SYSTEMS AND 466 LIGHT ARMORED VEHICLES.

TACTICAL AIR FORCES: DURING FY 1982-1984, THE AIR FORCE HAS FUNDED 111 F-15 AND 384 F-16 FIGHTER AIRCRAFT.

DURING FY 1981-1984, THE NAVY HAS FUNDED 78 F-14 AND 231 F/A-18 AIRCRAFT.

SEA FORCES: IN 1981, OUR DEPLOYABLE BATTLE FORCE NUMBERED 479 SHIPS. BY THE END OF FY 1984, IT WILL HAVE GROWN TO 525 SHIPS.

SHORTFALLS AND OBSOLESCENCE OF MILITARY HARDWARE, AND HIGHER COSTS FROM INEFFICIENT MANAGEMENT OF DEFENSE RESOURCES -- WOULD HAVE REQUIRED IMMEDIATE ATTENTION. BUT THIS ADMINISTRATION HAD TO ADDRESS THEM ALL SIMULTANEOUSLY, IF WE WERE TO RETURN AMERICA'S DEFENSE PROGRAMS TO A SAFE AND STEADY COURSE. AND WITH THE BIPARTISAN SUPPORT OF CONGRESS WE DID JUST THAT. LET ME REVIEW WITH YOU OUR PROGRESS, AND TELL YOU WHERE THIS BUDGET WILL TAKE US.

(CHART 4: SIGNIFICANT ACCOMPLISHMENTS)

-- READINESS AND SUSTAINABILITY. BY THE BEGINNING OF THIS DECADE, YEARS OF UNDERFUNDING READINESS AND SUSTAINABILITY HAD LEFT OUR FORCES UNPREPARED TO RESPOND QUICKLY IN A CRISIS OR TO SUSTAIN OPERATIONS FOR VERY LONG.

WE ACTED IMMEDIATELY TO RECTIFY THAT DANGEROUS SITUATION. AND, IN THE FY 1985 BUDGET WE CONTINUE TO PROVIDE ADDITIONAL FUNDS FOR MAINTENANCE AND INCREASED TRAINING. FOR EXAMPLE, THIS BUDGET WILL PERMIT US TO REDUCE DEPOT MAINTENANCE BACKLOGS BY 28 PERCENT OVER FY 1984 LEVELS. IT WILL ALSO PERMIT US TO CONTINUE INCREASING STEAMING DAYS FOR OUR FLEET AND FLYING HOURS FOR OUR AIR CREWS, ENABLING OUR FORCES TO STAY FULLY QUALIFIED. AT THE SAME TIME, OUR CAPABILITY TO SUSTAIN OUR FORCES IN THE FIELD WILL HAVE INCREASED BY ALMOST 50 PERCENT WHEN THE MUNITIONS AND

SPARES AND REPAIR PARTS PROCURED BY THE FY 1985 BUDGET ARE DELIVERED.

-- CONVENTIONAL MODERNIZATION. THIS ADMINISTRATION ALSO HAD TO CONFRONT A MAJOR SHORTFALL IN WEAPONS AND EQUIPMENT. MUCH OF WHAT WE DID HAVE, MOREOVER, WAS AGING AND INCREASINGLY OBSOLETE COMPARED TO THE NEW SOVIET HARDWARE.

DURING THE PAST THREE YEARS WE HAVE EMBARKED ON A LONG-TERM PROGRAM TO MODERNIZE OUR FORCES FOR THE FUTURE. DURING THE PAST THREE YEARS, WE HAVE EMBARKED UPON A LONG-TERM PROGRAM TO MODERNIZE OUR FORCES FOR THE FUTURE. THROUGH FISCAL YEAR 1984, WE HAVE FUNDED 2,360 M-1 ABRAMS TANKS, 1,800 BRADLEY FIGHTING VEHICLES SYSTEMS AND 466 LIGHT ARMORED VEHICLES FOR OUR GROUND FORCES. IN ADDITION, WE HAVE PROCURED 111 F-15 AND 384 F-16 FIGHTER AIRCRAFT FOR THE AIR FORCE AND 78 F-14 AND 231 F/A-18 AIRCRAFT FOR THE NAVY TO EXPAND OUR TACTICAL AIR FORCES. AND, IN 1981, OUR DEPLOYABLE BATTLE FORCE NUMBERED 479 SHIPS, BUT BY THE END OF FISCAL YEAR 1984, IT WILL HAVE GROWN TO 525 SHIPS.

IN THE FY 1985 BUDGET WE HAVE PROVIDED FOR A 19.5 PERCENT INCREASE IN INVESTMENT FUNDING TO RESTORE THE MOMENTUM OF OUR MODERNIZATION PROGRAM THAT WAS LOST LAST YEAR WHEN THE GROWTH OF OUR INVESTMENT FUNDING WAS CUT DRASTICALLY.

WE ARE CONTINUING TO IMPROVE THE FIREPOWER, MOBILITY, AND SURVIVABILITY OF OUR LAND FORCES BY PROCURING 710 BRADLEY

FIGHTING VEHICLES AND 720 M-1 ABRAMS TANKS. IT IS NOTEWORTHY THAT IN NATO COMPETITION THIS PAST SUMMER, THE M-1 PERFORMED BETTER THAN ANY U.S. TANK IN HISTORY.

FOR OUR AIR FORCE, WE ARE PLANNING TO BUY 48 F-15s AND 150 F-16s TO ENABLE US TO EXPAND OUR AIR FORCE TO STRENGTHEN OUR FORWARD DEPLOYED UNITS.

IN FY 1985, THE NAVY'S DEPLOYABLE BATTLE FORCE WILL REACH 545 SHIPS AS IT CONTINUES TO BUILD TOWARDS ITS GOAL OF 600 SHIPS. I AM PLEASED TO REPORT THAT NOW VIRTUALLY ALL OUR SHIPS ARE BEING DELIVERED ON SCHEDULE AND WITHIN BUDGET.

TO SUPPORT OUR MARINES, WE CONTINUE OUR IMPROVEMENT OF AMPHIBIOUS SHIPS. THE MARINES ARE ALSO OBTAINING IMPROVED TACTICAL MOBILITY AND FIREPOWER AS WE CONTINUE TO PURCHASE THE CH-53E HELICOPTER AND 155mm HOWITZER.

OUR GUARD AND RESERVE FORCES ARE BEING MODERNIZED AS WELL WITH SUCH ITEMS AS THE M-1 ABRAMS TANK, THE F-16 AIRCRAFT AND THE PERRY-CLASS GUIDED MISSILE FRIGATE.

FLEXIBILITY IS KEY TO THE EFFICIENT USE OF OUR MILITARY FORCES. THE INITIATIVES WE HAVE UNDERTAKEN WITH REGARD TO INTER-THEATRE AIRLIFT, READY RESERVE SHIPPING, ENROUTE SUPPORT OF AIRLIFT FORCES, AND PREPOSITIONED EQUIPMENT WILL ALLOW US TO DEPLOY OUR STRENGTH IN A TIMELY FASHION. THIS GIVES US THE

SIGNIFICANT ACCOMPLISHMENTS(continued)

MODERNIZATION - STRATEGIC FORCES:

WE HAVE DEPLOYED 3 TRIDENT-CLASS SUBMARINES AND FUNDED 8 MORE THROUGH FY 1984.

WE HAVE PROCEEDED WITH DEVELOPMENT OF THE TRIDENT II MISSILE AS WE COMPLETED PROCUREMENT OF TRIDENT I MISSILES.

PRELIMINARY WORK ON SMALL ICBM HAS BEEN FUNDED CONSISTENT WITH SCOWCROFT COMMISSION RECOMMENDATIONS.

WE HAVE FUNDED PROCUREMENT OF 18 B-1 BOMBERS THROUGH FY 1984.

WE HAVE BEGUN DEPLOYMENT OF THE B-52 BOMBER FLEET FOR CRUISE MISSILE CAPABILITY.

SIGNIFICANT PROGRESS ACCOMPLISHED IN UP-GRADING STRATEGIC COMMUNICATION AND CONTROL SYSTEMS.

WE HAVE MET THE IOC FOR GLCM AND PERSHING II.

CAPABILITY TO AVERT A CRISIS FROM TURNING INTO A WAR, OR TO HALT AGGRESSION BEFORE IT OVERCOMES OUR DEFENSES.

FURTHER, READINESS, SUSTAINABILITY, MODERNIZATION, AND PEOPLE PROGRAMS DRIVE THE NEED FOR AN ADEQUATE MILITARY CONSTRUCTION PROGRAM, WHICH IS WHY WE ARE ASKING FOR WHAT MAY APPEAR TO BE MAJOR INCREASES IN THIS YEAR'S BUDGET. THE INCREASE REQUESTED THIS YEAR IS ACTUALLY \$700 MILLION LESS THAN THE \$3.8 BILLION LOST TO CONGRESSIONAL ACTIONS OVER THE LAST THREE YEARS. APPROVAL OF OUR REQUEST WILL PUT US BACK ON TRACK IN PROVIDING DECENT PLACES FOR OUR PEOPLE TO WORK AND LIVE. THE POINT IS THAT A HIGH PRIORITY ON FACILITY INVESTMENT CAN MAKE A DEMONSTRABLE IMPACT ON MORALE, EFFICIENCY, READINESS AND RESULT IN DECADES OF STRENGTHENED NATIONAL DEFENSE.

(CHART 5: SIGNIFICANT ACCOMPLISHMENTS - CONTINUED)

-- STRATEGIC MODERNIZATION. DANGEROUS OBSOLESCENCE THREATENED ALL THREE LEGS OF OUR STRATEGIC TRIAD IN 1980, THREATENING THE STABILITY OF DETERRENCE.

OUR STRATEGIC MODERNIZATION PROGRAM IS NOW STRENGTHENING ALL THREE LEGS OF THE STRATEGIC TRIAD AS WELL AS OUR STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS SYSTEMS. THREE TESTS OF THE MX/PEACEKEEPER HAVE NOW BEEN COMPLETED, AND THE FY 1985 BUDGET INCLUDES FUNDS FOR PRODUCTION OF 40 MISSILES AND CONTINUED RESEARCH ON THE SMALL MISSILE. OUR FIRST NEW

STRATEGIC BOMBER IN MORE THAN THIRTY YEARS IS IN PRODUCTION, WITH 34 B-1Bs PLANNED TO BE PROCURED IN THE FY 1985 BUDGET. WE ALSO HAVE REQUESTED FUNDS TO BUILD THE TWELFTH TRIDENT SUBMARINE AND FOR DEVELOPMENT OF TRIDENT II MISSILES WHICH WILL PROVIDE OUR SUBMARINE FORCE THE INCREASED PAYLOAD AND IMPROVED ACCURACY NEEDED TO ASSURE EFFECTIVE RETALIATION AGAINST HARDENED TARGETS. FINALLY, OUR C3 SYSTEMS ARE BEING MODERNIZED AND UPGRADED.

AT PRESIDENT REAGAN'S BEHEST WE ARE ALSO EMBARKING ON A BOLD NEW EFFORT TO EXAMINE AND ASSESS MANY DIFFERENT OPTIONS TO GIVE US A RELIABLE AND EFFECTIVE DEFENSE AGAINST INCOMING SOVIET BALLISTIC MISSILES. THIS WILL REQUIRE MANY YEARS. I BELIEVE IT IS THE MOST SIGNIFICANT STEP WE CAN TAKE TO PRESERVE PEACE WITH FREEDOM AND TO PASS ON TO OUR CHILDREN THE LEGACY OF A SAFER WORLD. IT IS, AS THE PRESIDENT HAS SAID, FAR BETTER TO PROTECT OUR PEOPLE THAN TO AVENGE THEM. WE SEEK ABOUT \$1.8 BILLION IN THIS BUDGET FOR THIS PURPOSE - \$250 MILLION IS NEW MONEY AND THE BALANCE WILL BE REPROGRAMMED FROM THE STUDY OF LESS EFFECTIVE, MORE TECHNICAL ABM SYSTEMS.

THE STRATEGIC MODERNIZATION PROGRAM, THE STRATEGIC DEFENSE INITIATIVE, AND THE DIRECT COSTS OF OPERATING OUR STRATEGIC FORCES TOGETHER COMPRISE LESS THAN 15% OF THE DEFENSE BUDGET.

-- MANAGEMENT REFORM. UPON TAKING OFFICE WE ALSO DISCOVERED THAT OUR OUTDATED DEFENSE PROCUREMENT SYSTEM FAILED TO TAKE FULL ADVANTAGE OF COMPETITION, AND CONTAINED FEW INCENTIVES TO REDUCE

ACTIVITIES TO CURB WASTE, FRAUD & ABUSE

Audits of Internal Management of Defense Operations and Programs
18,467 Reports
Potential savings: \$1.6 Billion

Investigative Cases

16,357 Cases Closed

8,023 Cases Referred for Prosecution or Administrative Action

657 Convictions

Fines, Penalties, Restitutions, and Recoveries Collected from Referrals to:

Justice Department: \$5.2 Million

Military Departments: \$9.6 Million

DCAA Audits

57,782 Reports

\$28.6 Billion in Contract Costs Questioned - \$9.1 Billion Sustained

PROGRAM TO END SPARE PARTS PRICE ABUSE

1. Incentives for Employees to Find Cost Savings.
2. Stern Disciplinary Action Against Employees Allowing Abuses to Continue.
3. Senior Management to Alert Contractors to the Seriousness of the Problem and Our Strong Resolve to Control Prices.
4. Services to Make the Competition Advocate Program Work.
5. Services to Refuse to Pay Unjustified Price Increases.
6. Services to Seek Refunds Where Overcharges Have Occurred.
7. Services to Cease Doing Business with Contractors Refusing to Meet Our Contracting Standards.
8. Reforms in Our Basic Contract Procedures.
9. Additional Audits and Investigations.
10. Secretary's Personal Resolve to Straighten Up the Spare Parts Situation.

COSTS OR IMPROVE EFFICIENCY. LIKEWISE, AS INVESTMENTS IN AMMUNITION, SPARE PARTS, AND NEW WEAPONS AND EQUIPMENT WERE CANCELLED, POSTPONED, OR STRETCHED OUT, COST-EFFICIENT PRODUCTION BECAME IMPOSSIBLE.

THIS ADMINISTRATION UNDERTOOK A WIDE-RANGING MANAGEMENT REFORM PROGRAM THAT INCLUDED A THOROUGH AND FORTHRIGHT AUDIT PROGRAM TO IDENTIFY THE SOURCES OF WASTE AND INEFFICIENCY AND A COMPREHENSIVE ACQUISITION IMPROVEMENT PROGRAM TO INSTILL SOUND BUSINESS PRACTICES IN DEFENSE PROCUREMENT.

(CHART 6: ACTIVITIES TO CURB WASTE, FRAUD AND ABUSE)

OUR JOINT EFFORTS WITH THE DEPARTMENT OF JUSTICE TO PROSECUTE THOSE WHO DEFRAUD THE DEFENSE DEPARTMENT ARE PAYING OFF IN RECOVERIES OF FUNDS FOR THE U.S. GOVERNMENT AND SHOULD ALSO BE A DETERRENT TO HALT FUTURE FRAUD. LIKEWISE, THE EXTENSIVE PROCUREMENT REFORMS BEGUN IN 1981 HAVE BECOME INSTITUTIONALIZED AND ARE NOW PAYING DIVIDENDS.

(CHART 7: TEN-POINT SPARE PARTS REFORM PROGRAM)

WE HAVE TAKEN FIRM STEPS TO END THE SPARE PARTS PRICING ABUSES WHICH WE UNCOVERED AND REPORTED. THE TEN-POINT SPARE PARTS REFORM PROGRAM THAT I BRIEFED TO THIS COMMITTEE LAST JULY IS FULLY IN PLACE AND WORKING. MOST IMPORTANTLY, WE HAVE

MANAGEMENT IMPROVEMENTS

CREATION OF INSPECTOR GENERAL (IG)

AUDITS
INVESTIGATIONS

TEN-POINT SPARE PARTS PROGRAM

AUDITS
ADMINISTRATIVE, LEGAL, CONTRACTUAL EFFORTS

ACQUISITION IMPROVEMENT PROGRAM (AIP)

PROGRAM STABILITY
MULTIYEAR PROCUREMENT
ECONOMIC PRODUCTION RATES
REALISTIC BUDGETING
IMPROVED READINESS AND SUPPORT
INCREASED COMPETITION

ENHANCED DECISIONMAKING PROCESS

SERVICE SECRETARIES
JCS

REFORM '88 AND THE GRACE COMMISSION

INSTITUTIONALIZED THOSE REFORMS SO THEY WILL CONTINUE TO WORK ON INTO THE FUTURE.

(CHART 8: MANAGEMENT IMPROVEMENTS)

TO OBTAIN LOWER COSTS AND BETTER QUALITY, WE ARE STRESSING GREATER COMPETITION IN DEFENSE PROCUREMENT; AND ADVOCATES OF COMPETITION ARE NOW WORKING IN ALL BUYING COMMANDS TO CHALLENGE NON-COMPETITIVE PURCHASES. TO ASSURE CONTINUED COMPETITION, SELECTED NEW CONTRACTS INCLUDE PROVISIONS DESIGNED TO PROVIDE THE DATA NECESSARY TO SEEK SECOND SOURCES OF SUPPLY IN PURCHASING PARTS.

TO MAINTAIN CONTROL OVER COSTS, THE DEFENSE DEPARTMENT IS ENCOURAGING HIGHER QUALITY BUDGET ESTIMATES THROUGH THE APPLICATION OF MORE REALISTIC INFLATION INDICES. THIS IS INTENDED TO HALT THE PAST PRACTICE OF OVER-OPTIMISTIC ESTIMATES THAT MADE A WEAPON SYSTEM APPEAR AFFORDABLE BUT LEFT A LEGACY OF COST OVERRUNS. THE DEPARTMENT IS ALSO MAKING THE TOUGH DECISIONS NECESSARY TO ELIMINATE MARGINAL PROGRAMS AND MAINTAIN HIGH PRIORITY PROGRAMS AT STABLE AND EFFICIENT RATES.

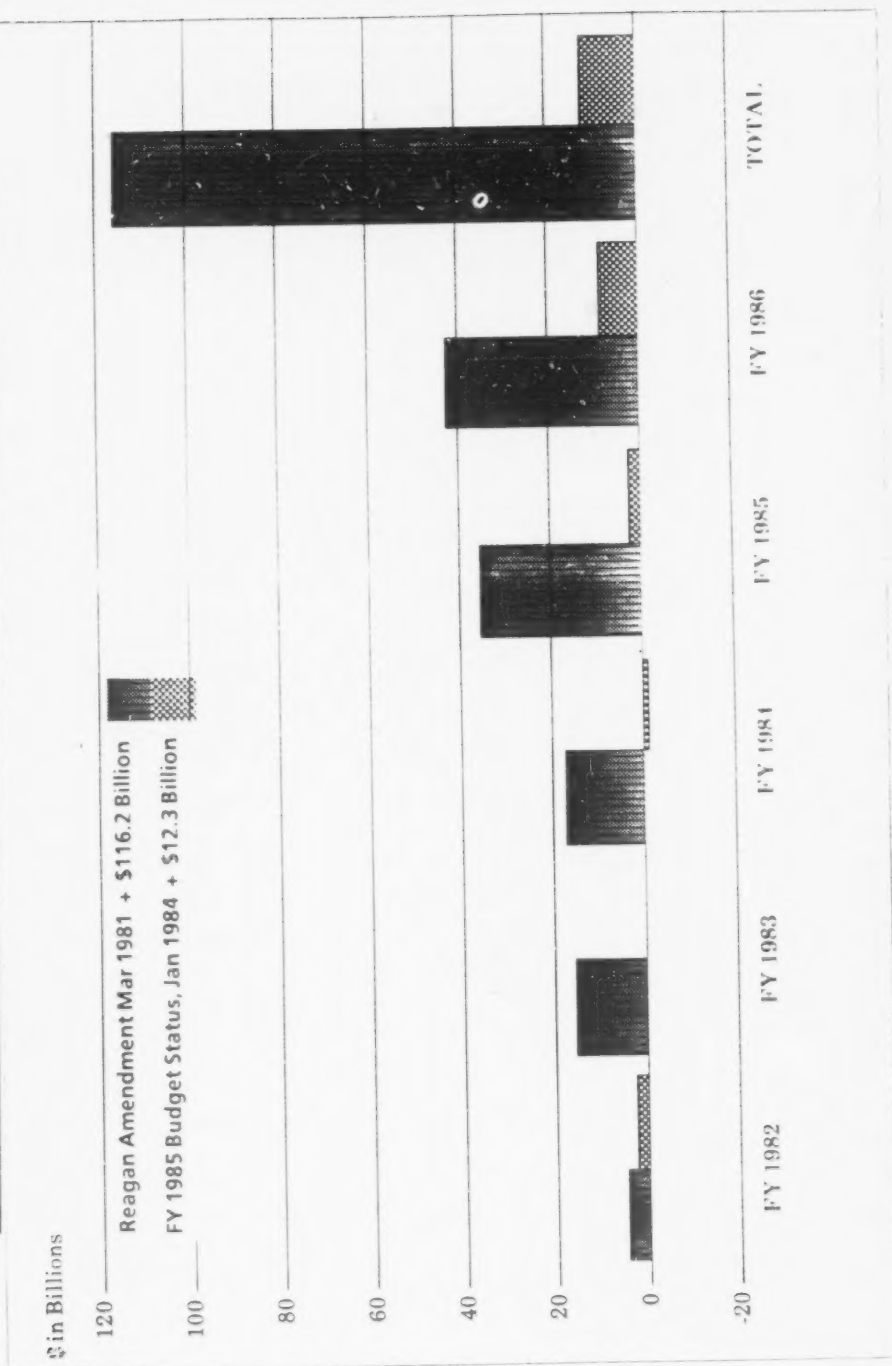
OUR REFORMS AND IMPROVEMENTS COMPLEMENT THE PRESIDENT'S REFORM '88 PROGRAM. AND IT IS REASSURING THAT THE GRACE COMMISSION SUPPORTS AND ENCOURAGES THE DEPARTMENT IN MANY OF OUR ACQUISITION INITIATIVES. MOST IMPORTANTLY, THEY ARE WORKING.

WISE INVESTMENTS AND GOOD BUSINESS PRACTICES ARE GIVING US MORE DEFENSE FOR THE DOLLAR. BUT JUST AS WE MUST BE CONCERNED WITH THE STEWARDSHIP OF THE TAXPAYER'S INVESTMENT IN DEFENSE, WE MUST ALSO CONSIDER THE NATION'S ECONOMIC WELL-BEING. WHILE THE PURPOSE FOR DEFENSE BUDGETS IS TO PROVIDE FOR OUR NATION'S SECURITY TODAY AND FOR THE FUTURE, WE KNOW FROM RECENT EXPERIENCE THAT THE DEFENSE BUILDUP ALSO HAS VERY POSITIVE EFFECTS ON THE ECONOMY. A LARGE PERCENTAGE OF DEFENSE SPENDING GOES DIRECTLY TO THE PRIVATE SECTOR IN RETURN FOR THE PRODUCTION OF NEW GOODS AND SERVICES. THIS RESULTS IN INVESTMENT IN PLANT AND CAPITAL EQUIPMENT, WHICH IN TURN LEADS TO MEANINGFUL, LONG-TERM JOBS. THIS HAS OCCURRED NOT ONLY IN BASIC MANUFACTURING BUT IS ALSO OCCURRING IN MANY NEW AREAS OF MANUFACTURING TECHNOLOGY AND RESEARCH.

PRESIDENT REAGAN HAS SET A NATIONAL GOAL TO LOWER THE FEDERAL DEFICIT. I WHOLEHEARTEDLY SUPPORT HIS COMMITMENT TO THAT GOAL AND BELIEVE THAT JUST AS HIS FIRM LEADERSHIP HAS BROUGHT US A SAFER, MORE SECURE PEACE, IT WILL ALSO BRING US CLOSER TO A BALANCED BUDGET. WE IN THE DEFENSE DEPARTMENT INTEND TO CONTINUE TO WORK TOWARDS THAT GOAL.

WHEN THIS ADMINISTRATION FIRST ESTABLISHED A DEFENSE BUILDUP FOR FY 1982 TO 1986, AN ADDITIONAL \$186.0 BILLION IN BUDGET AUTHORITY WAS PROPOSED OVER AMOUNTS PLANNED FOR THAT TIME PERIOD BY THE PREVIOUS ADMINISTRATION. SINCE THEN, \$92.5 BILLION OF

STATUS OF DEFENSE OUTLAYS ADDED BY REAGAN - 1981



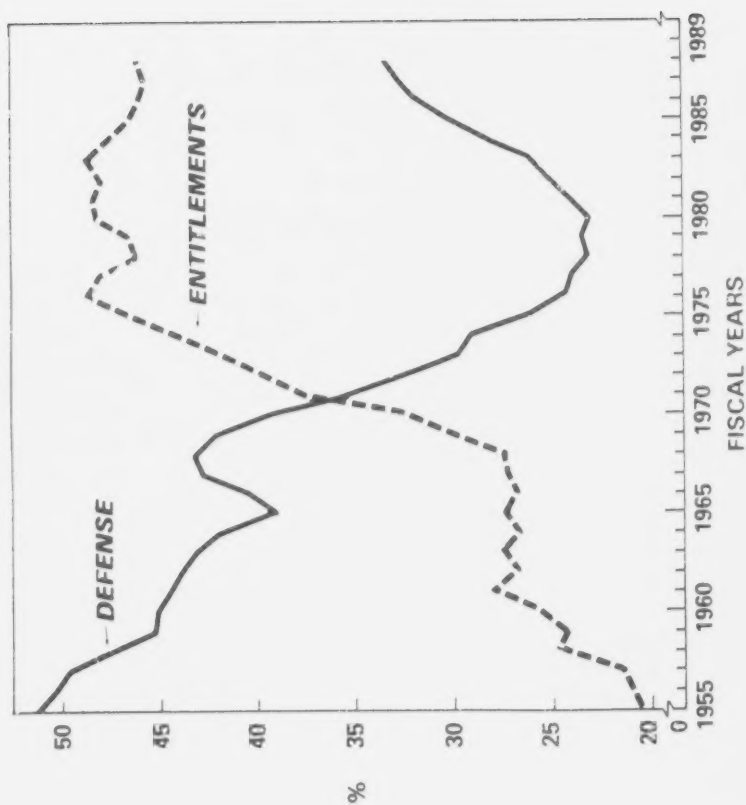
THAT ORIGINAL INCREMENT HAS BEEN DELETED FROM DEFENSE REQUIREMENTS THROUGH MANAGEMENT ACTIONS, CONGRESSIONAL REDUCTIONS, AND MORE FAVORABLE ECONOMIC CONDITIONS IN THE FORM OF LOWER THAN ORIGINALLY PLANNED INFLATION. SPECIFICALLY, LAST YEAR'S PROJECTIONS FOR FY 1985 FUNDING REQUIREMENTS ENVISIONED A TOTAL OF \$321.6 BILLION. THE BUDGET PRESENTED TO YOU THIS YEAR REQUESTS \$305 BILLION IN BUDGET AUTHORITY FOR FY 1985, A REDUCTION OF \$16.6 BILLION.

(CHART 9: STATUS OF DEFENSE OUTLAYS ADDED BY REAGAN)

SIMILAR TO THE REVISIONS IN BUDGET AUTHORITY REQUIREMENTS BUT PERHAPS EVEN MORE DRAMATIC IS THE REDUCTION IN DEFENSE OUTLAYS THAT HAS TAKEN PLACE SINCE THE INITIAL DEFENSE PLAN FOR FY 1982 TO FY 1986 THAT WAS FORMULATED IN THE EARLY SPRING OF 1981. ORIGINALLY, \$116.2 BILLION IN DEFENSE SPENDING WAS ENVISIONED OVER THE OUTLAY LEVELS PLANNED BY THE PREVIOUS ADMINISTRATION. TODAY, ALL BUT \$12.3 BILLION OF THAT AMOUNT HAS BEEN REMOVED OR IS NOW PROPOSED TO BE DELETED FROM THAT ORIGINAL DEFENSE PLAN. AS A RESULT, DEFENSE HAS INDEED CONTRIBUTED A SIGNIFICANT PORTION TO THE OVERALL FEDERAL FISCAL CONSTRAINT ACHIEVED TO DATE.

BUT WHEN CONSIDERING A POSSIBLE RELATIONSHIP BETWEEN DEFENSE SPENDING AND THE DEFICIT, WE COULD START BY LOOKING AT THE ECONOMIC AND BUDGETARY EVENTS OF THE PAST THREE YEARS. CLEARLY DEFICITS HAVE WORSENERD DURING THAT PERIOD AND I AM SURE THAT

SHARES OF THE BUDGET (OUTLAYS)



THERE ARE A NUMBER OF VERY WELL QUALIFIED ECONOMISTS WHO CAN EXPLAIN WHAT THEY BELIEVE TO BE THE PRINCIPAL CAUSES. IN THE CASE OF THE DEFENSE BUDGET, HOWEVER, I CAN STATE THAT FOR THE FISCAL YEARS 1982 TO 1986, WE WILL NOW BE SPENDING ABOUT \$104 BILLION LESS THAN WAS PLANNED IN THE SPRING OF 1981. SINCE THEN, A GREAT DEAL OF PROGRESS HAS BEEN MADE ON THE PRESIDENT'S ECONOMIC GOALS, SUCH AS SIGNIFICANTLY REDUCING THE RATE OF INFLATION. THIS HAS HELPED TO LOWER DEFENSE SPENDING, BUT ON THE OTHER HAND, THERE ARE A NUMBER OF OTHER FACTORS BESIDES DEFENSE SPENDING THAT AFFECT FUTURE DEFICITS.

BY CONTRAST, I HAVE ALSO NOTICED THAT NONDEFENSE FEDERAL SPENDING IS HIGHER NOW THAN THE PRESIDENT PROPOSED THREE YEARS AGO FOR FISCAL YEARS 1982 TO 1986. UNEMPLOYMENT, THOUGH NOW SHOWING A SHARP RATE OF DECLINE, IS STILL ABOVE LEVELS PROJECTED THREE YEARS AGO AND THEREFORE HAS ADDED TO FEDERAL DEFICITS. MY POINT HERE IS NOT TO SEEK OUT THE AREAS FOR BLAME, BUT JUST TO STATE AS DIRECTLY AS I CAN THAT I DO NOT ACCEPT THE NOTION THAT THE RECENT DEFENSE BUILDUP IS THE PRIMARY CAUSE OF THE RECENT INCREASE IN FEDERAL DEFICITS.

(CHART 10: COMPARISON OF DEFENSE/ENTITLEMENTS SPENDING)

IN FACT, IF WE LOOK AT THE TRENDS OF THE PAST DECADES WE CAN SEE THAT EVEN WITH OUR NECESSARY INCREASES TO REDRESS THE NEGLECT OF THE PAST, DEFENSE'S SHARE OF THE FEDERAL BUDGET AND GNP ARE STILL LOWER THAN THE 1950s AND 1960s. IN 1955, THE

COMPARISON OF PUBLIC SPENDING TRENDS

OUTLAYS

(PERCENT CHANGE)

<u>FISCAL YEAR</u>	<u>NATIONAL DEFENSE</u>	<u>ALL OTHER FEDERAL</u>	<u>STATE & LOCAL</u>
1970-1980	-19%	+ 88%	+ 30%
1981-1983	+ 22%	+ 7%	+ 1%
1970-1983	+ 3%	+ 106%	+ 32%

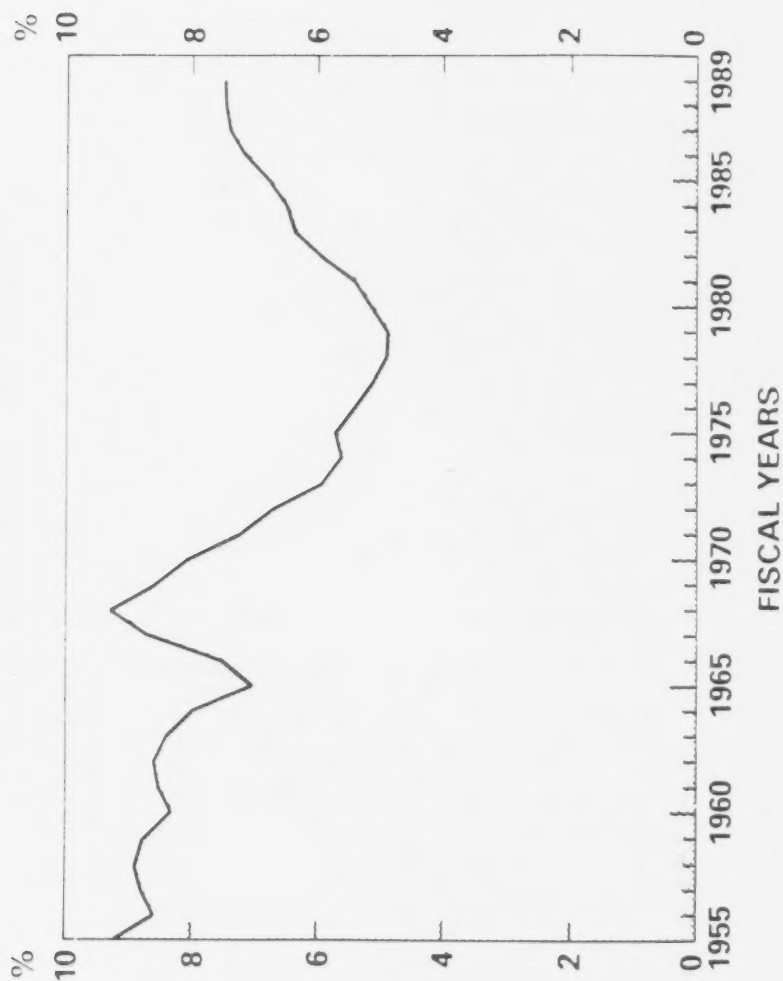
DEFENSE BUDGET COMPRISED MORE THAN 50 PERCENT OF THE FEDERAL BUDGET. THIS SHARE DROPPED PRECIPITIOUSLY FROM 1955 TO A LOW OF 23 PERCENT IN 1980, EXCEPT FOR A BRIEF UPTURN DURING THE VIETNAM YEARS. THE FY 1985 DEFENSE BUDGET REPRESENTS ABOUT 29 PERCENT OF TOTAL FEDERAL SPENDING. DURING THIS SAME TIMEFRAME, PAYMENTS TO INDIVIDUALS (ENTITLEMENTS) HAVE SHOWN THE REVERSE TREND. IN 1955, THESE PAYMENTS REPRESENTED ABOUT 20 PERCENT OF THE BUDGET AND ARE EXPECTED TO PEAK IN 1983 AT NEARLY 50 PERCENT. THESE PROGRAMS INCLUDE: SOCIAL SECURITY, UNEMPLOYMENT COMPENSATION, HOUSING ASSISTANCE, HEALTH CARE SERVICES, FOOD AND NUTRITION, AND EDUCATIONAL ASSISTANCE.

(CHART 11: COMPARISON OF PUBLIC SPENDING TRENDS)

ANOTHER INTERESTING COMPARISON IS THE PERCENTAGE CHANGE YEAR-TO-YEAR BY THE MAJOR COMPONENTS OF PUBLIC SPENDING. HERE, TOO, WE SEE THAT UNTIL THIS ADMINISTRATION, DEFENSE SPENDING RAN COUNTER TO THE TRENDS BEING EXPERIENCED IN OTHER PUBLIC SECTORS. SINCE 1970, GROWTH IN REAL NONDEFENSE SPENDING, INCLUDING FEDERAL NONDEFENSE AND STATE AND LOCAL GOVERNMENTS, HAS CONSISTENTLY OUTPACED GROWTH IN DEFENSE SPENDING. EVEN DURING THE LATTER PART OF THE DECADE, WHEN DEFENSE SPENDING BEGAN TO INCREASE SOMEWHAT, GROWTH IN NONDEFENSE SPENDING REMAINED HIGHER. IT HAS ONLY BEEN IN THE LAST THREE YEARS THAT DEFENSE SPENDING HAS GROWN MORE THAN NONDEFENSE SPENDING. STILL, EVEN WITH THIS RECENT GROWTH, AVERAGE GROWTH IN DEFENSE SPENDING FOR THE PERIOD 1970 TO 1983 WAS ONLY 3 PERCENT COMPARED

DEFENSE OUTLAYS AS A SHARE OF GNP

CHART 12



WITH 106 PERCENT FOR FEDERAL NONDEFENSE AND 32 PERCENT FOR STATE AND LOCAL.

(CHART 12: COMPARISON OF DEFENSE'S SHARE OF GNP)

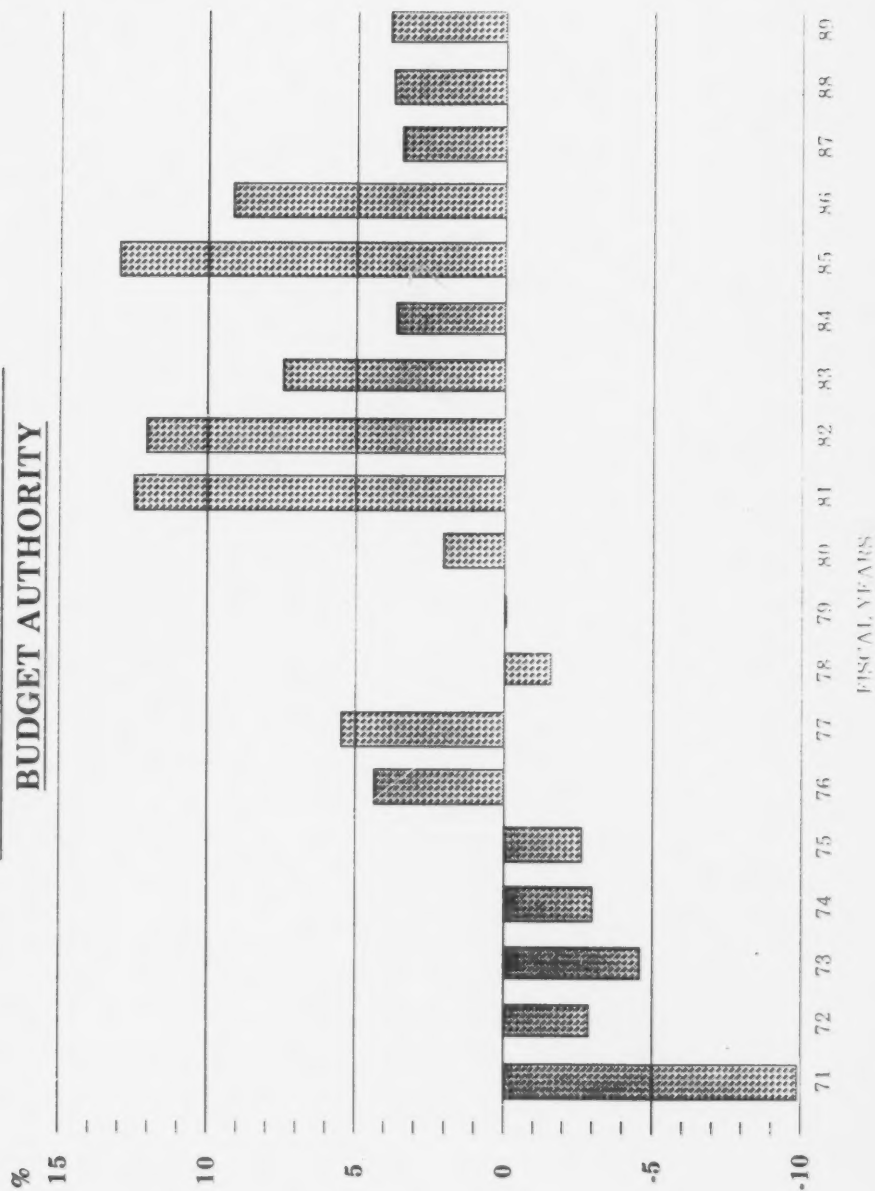
FURTHER, AS YOU ADDRESS THE ALLOCATION OF OUR NATION'S RESOURCES TO MEET NATIONAL PRIORITIES, IT IS IMPORTANT PERHAPS TO PUT THE DEFENSE SHARE OF OUR ECONOMIC RESOURCES IN PERSPECTIVE. MEASURED IN TERMS OF THE COUNTRY'S GROSS NATIONAL PRODUCT, THE FY 1985 BUDGET REPRESENTS A DEFENSE SHARE OF AROUND 7 PERCENT AND BY THE END OF THE DECADE IS PROJECTED TO BE 7.5 PERCENT. THIS LEVEL IS STILL WELL BELOW MANY OF THE PAST YEARS. I THINK IT IS SAFE TO SAY THAT DEFENSE OUTLAYS CONSUME A REASONABLE SHARE OF OUR NATION'S RESOURCES, AND THIS SHARE IS AFFORDABLE.

THE DEFENSE PROGRAM WE ARE PRESENTING TO YOU PROVIDES THE UNITED STATES THE MOST PRUDENT AND EFFECTIVE MEANS OF DOING ITS SHARE TO PROTECT THE WELL-BEING OF OUR FREE AND PRODUCTIVE SOCIETIES. IT IS ALSO AN AFFORDABLE PROGRAM.

BUT LET US HAVE NO ILLUSIONS: THE NEXT FEW YEARS WILL BE AS CRUCIAL FOR AMERICA'S DEFENSE PROGRAM AS THEY WILL BE DIFFICULT. AS THE BILLS THAT WE AS A NATION PUT OFF TOO LONG CONTINUE TO COME DUE, IT WILL BE TEMPTING TO SEARCH FOR EXCUSES TO AVOID THE RECKONING ONCE MORE. WE MUST NOT YIELD TO THAT TEMPTATION. ALREADY CONGRESS HAS CUT BACK ON OUR OPERATION AND MAINTENANCE BUDGETS, THREATENING HARD-WON IMPROVEMENTS IN READINESS, AND

Chart 13

REAL GROWTH IN DEFENSE BUDGET AUTHORITY



LARGE CONGRESSIONAL REDUCTIONS IN INVESTMENT WILL SLOW DOWN DEVELOPMENT AND ACQUISITION PROGRAMS, INCREASING THE COST OF WHAT ALL AGREE WE WILL NEED, AND COURTING THE DANGERS INHERENT IN TAKING TOO LONG TO SECURE AN EFFECTIVE DETERRENT. ALREADY CRITICS OF THE DEFENSE BUDGET ARE DISCOVERING A NEW ENTHUSIASM FOR WEAPONS THAT ARE -- CONVENIENTLY -- STILL ON THE DRAWING BOARDS, EVEN AS THEY OPPOSE PROCUREMENT OF HARDWARE AVAILABLE NOW TO STRENGTHEN OUR FORCES.

(CHART 13: GROWTH IN DEFENSE BUDGET, 1981-1987)

UNFORTUNATELY, SEVERAL YEARS OF STRONG DEFENSE BUDGETS CANNOT MAKE UP FOR A DECADE OF NEGLECT. RESTORING -- AND THEN MAINTAINING -- THE MILITARY BALANCE REQUIRES A DETERMINED AND SUSTAINED EFFORT. THE DEEP CUTS IMPOSED BY CONGRESS IN THE FY 1984 BUDGET REQUEST DISTORT THE BASE FROM WHICH AN APPARENT LARGE INCREASE IN REAL GROWTH IS REQUESTED. IN REALITY, FOR THE FOUR FISCAL YEARS ADDRESSED BY THIS ADMINISTRATION, INCLUDING FY 1984, THE DEFENSE BUDGET IN REAL TERMS SHOWS AN AVERAGE ANNUAL INCREASE OF OVER 8 PERCENT PER YEAR. IF WE FAIL TO RESTORE THE MOMENTUM OF OUR DEFENSE PROGRAM AND STOP IN MIDCOURSE, WE WILL ONLY ENDANGER THE PROGRESS WE HAVE MADE IN RECENT YEARS, AND INVITE SPECULATION BY FRIENDS AND ADVERSARIES ALIKE THAT THE UNITED STATES CAN SUSTAIN NEITHER ITS WILL NOR ITS LEADERSHIP.

FY 1985 DEPARTMENT OF DEFENSE BUDGET **LONG RANGE FORECASTS**

<u>BA (\$ BILLIONS)</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
MILITARY RETIRED PAY *	16.6	17.6	19.4	20.9	22.5	24.0
OTHER MILITARY FUNCTIONS	<u>241.6</u>	<u>287.4</u>	<u>330.2</u>	<u>358.3</u>	<u>389.0</u>	<u>422.1</u>
TOTAL, CURRENT PRICES	258.2	305.0	349.6	379.2	411.5	446.1
TOTAL, CONSTANT (1985) Prices	269.9	305.0	333.0	344.7	357.9	371.7
PERCENT CHANGE	3.7%	13.0%	9.2%	3.5%	3.8%	3.9%
<u>OUTLAYS (\$ BILLIONS)</u>						
MILITARY RETIRED PAY *	16.8	17.4	19.3	20.9	22.5	23.9
OTHER MILITARY FUNCTIONS	<u>214.2</u>	<u>247.0</u>	<u>282.5</u>	<u>318.3</u>	<u>347.3</u>	<u>374.9</u>
TOTAL, CURRENT PRICES	231.0	264.4	301.8	339.2	369.8	398.8
TOTAL, CONSTANT (1985) Prices	241.8	264.4	286.7	306.8	319.5	330.1
PERCENT CHANGE	8.8%	9.3%	8.4%	7.0%	4.1%	3.3%
COMPOSITE PAY/PRICE ASSUMPTIONS FOR OUTLAYS (FY 1985 = 100%)	95.5	100.0	105.3	110.6	115.8	120.9

* Retired Pay is on a cash basis in FY 1984 and on an accrual basis thereafter.

(CHART 14: LONG RANGE FORECASTS)

BY THE SAME TOKEN, IF WE ARE ALLOWED TO CONTINUE ON THE PATH WE HAVE SET, WE CAN LOOK FORWARD TO A TIME, ONLY TWO FISCAL YEARS FROM NOW, WHEN DEFENSE INCREASES CAN BEGIN TO SLOW DRAMATICALLY. THE INITIAL DEFENSE RECOVERY PROGRAM PLANNED BY THIS ADMINISTRATION IN 1981 ENCOMPASSED FIVE FISCAL YEARS. IF WE CAN MAINTAIN THE RESOLVE TO SUPPORT THE REMAINING REQUIREMENTS OF OUR DEFENSE BUILDUP FOR THESE LAST TWO FISCAL YEARS, THEN WE WILL BENEFIT FROM A STRONGER DEFENSE AND BEGIN TO SEE A DECLINING RATE OF GROWTH IN FUTURE DEFENSE REQUIREMENTS. THIS IS CLEARLY DEMONSTRATED IN THE FISCAL YEAR 1985 LONG-RANGE FORECAST THAT SHOWS THE RATE OF GROWTH IN BOTH BUDGET AUTHORITY AND OUTLAYS BEGINNING TO DECLINE.

DURING THE COMING MONTHS YOU WILL CONFRONT IMPORTANT -- AND DIFFICULT -- BUDGETARY DECISIONS THAT WILL SHAPE AMERICA'S SECURITY THROUGH THE END OF THIS CENTURY. OVER THE PAST THREE YEARS, CONGRESS AND THIS ADMINISTRATION HAVE WORKED TOGETHER TO REBUILD AMERICA'S DEFENSES AND RESTORE OUR LEADERSHIP IN THE WORLD. WE HAVE MADE GREAT PROGRESS. THIS YEAR LET US AGAIN WORK TOGETHER TO PRESERVE OUR GAINS AND MOVE CLOSER TO OUR GOAL OF A STRONGER AND MORE SECURE AMERICA, THE BEST GUARANTEE OF A LASTING PEACE.

Chairman DOMENICI. General Vessey.

STATEMENT OF GEN. JOHN W. VESSEY, JR., CHAIRMAN, JOINT CHIEFS OF STAFF

General VESSEY. Mr. Chairman, members of the committee, Secretary Weinberger has covered the major points of the budget. He has laid out very clearly the need for a strong defense and why the budget is a sound basis for that defense.

I have got a prepared statement, and I ask that it be put in the record, but I would like to add a couple of points.

Chairman DOMENICI. Without objection, the entire written statement will be inserted into the record.¹

STRENGTH OF AMERICAN FORCES IS GOOD

General VESSEY. The health of our Armed Forces is good. That trend is most evident in the quality of the men and women in uniform. In my visits to the operating forces all over the world, I concluded that soldiers, sailors, airmen, and marines that we have in uniform today are about the best I have seen in the 45 years that I have been in uniform. Certainly, both the Congress and the executive branch can take credit for this renewed strength. On behalf of the men and women of the Armed Forces and my colleagues on the Joint Chiefs of Staff, I want to thank you for your support.

Oftentimes, we talk a lot about hardware, but it is important to remember that people are the heart of our Armed Forces. We are now filling up the shortages in skilled noncommissioned officers and recruiting and retention are good. But I just want to warn you that we need to make sure that military life continues to be attractive to the young men and women of the United States, or we will not continue to have good armed forces.

The operational commanders in the field report renewed confidence in their forces. New, good equipment from the long-delayed modernization program is now coming into the hands of the operating forces. That helps not only the confidence of our own commanders, but in my talks with the military leaders of our allies they, too, are reassured by the restored strength of the American forces. They see it in the exercises that we conduct with those forces.

These facts have to serve as an incentive for Soviet restraint. The growth of our strength will certainly eventually provide a climate for sensible negotiations with the Soviets.

But I say to you that the Nation should not slack off. This is a key year for the United States in building our defenses.

SOVIETS NOT STANDING STILL

Last year I reported that we were making progress in reversing the decline of the seventies and modernizing both our general purpose forces and our strategic nuclear deterrent force.

With the pace of what the Soviets are doing, it is important that we press on. We need to remember that, while we are making progress, the Soviets are not standing still. They still continue to

¹ See p. 65.

field increasingly capable equipment in the large and modern conventional forces. And this year they will have completed the very significant modernization of their intercontinental ballistic missile forces, while we have yet to put even one of our new Peacekeepers in a silo. The Soviets continue to fish in the troubled waters of the resource-rich Third World.

When I look at their forces, I see forces that are very large, capable of offensive operations on a global scale, and increasingly capable of achieving their wartime objectives. And we see a willingness by the Soviets to use those forces.

When I look at our forces, I see forces that are designed essentially for deterrence. That has been our strategy, and it is a sensible strategy. We need to make it clear to any aggressor that he cannot achieve his objectives by war or the threat of war.

The Joint Chiefs have looked at the strategy and the threat we face. We believe that the budget will better insure the security needs of the Nation.

Our Nation need not match the Soviets weapon for weapon or man for man, and certainly that is not our plan. Certainly, we should not neglect the other elements of our power, our political strength, economic strength, and spiritual health. But the Nation absolutely must continue to deal realistically with the unrelenting growth of Soviet power and the realities that face us in the world.

I urge the Congress to remember that in this turbulent world if we haven't made the military preparations in advance, when the crisis occurs we will not have the opportunity to make the preparations at that time. I would say to you, from the point of view of the Joint Chiefs of Staff that our buildup is not a massive buildup. It is not an excessive buildup. It is only a modest and prudent buildup in light of the world that we see.

PROVIDE STEADINESS IN UNSTEADY WORLD

A year and a week ago, the Secretary and I were in front of the Senate Armed Services Committee. The late Senator Jackson made what I thought was a very important statement, and I think it is as important today as it was then. He said: "I would hope that this would be a time of steadiness, a time when we go about our work in a manner and in a way which will demonstrate to the world that we can provide a very strong and steady hand in a very unsteady world." I think that is the challenge that we all face because the world looks to this country with only 7 percent of its population and the world expects at times bigger things than we are capable of providing, but above all else I think we need to provide a steadiness, not only in reality, but in appearance that will give confidence to others.

Thank you very much, Mr. Chairman.

Senator ANDREWS. Thank you, General Vessey.

[The prepared statement of General Vessey follows:]

STATEMENT OF
GENERAL JOHN W. VESSEY, JR., USA
CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Mr. Chairman and Members of the Committee:

The US military posture has improved from the low point of the 1970s. Commanders in the field report renewed confidence in their forces. The resources provided have permitted them to reverse the decline in the total force readiness and sustainability of existing forces. Moreover, these resources are a firm foundation upon which to continue to build the deterrent forces which, together with those of our allies, are necessary to protect the Nation's interests for the remainder of this century. The Congress and the Executive Branch have made this possible. And, on behalf of my colleagues on the Joint Chiefs of Staff and the men and women in uniform, I thank you for your support.

The Nation's military forces are good and substantial progress is being made in overcoming past deficiencies. Many programs are beginning to show positive effects with the operating forces. Good people are the heart of our forces, and we're filling up the shortages in skilled manpower. Recruitment and retention are excellent. New, good equipment from long-delayed modernization is now coming into the hands of our soldiers, sailors, airmen, and Marines where it counts most. Our forces are well trained and well led. In talking to military leaders of our allies and friends, I find that they, too, are reassured by the restored strength of American forces.

These facts serve as an incentive for Soviet restraint, and the growth of our strength will eventually provide a climate for sensible negotiations.

However, the Nation should not be complacent, nor accept the notion that these past three years can somehow erase the decline in real growth over the 1970s or eliminate the gap caused by the continued growth of Soviet power. Reductions in the President's requested budget this past year have slowed the momentum of revitalization. This slowed rate of growth in force capabilities will affect readiness and retard responsiveness in a crisis. The Joint Chiefs of Staff have looked at the threats to our Nation's security and at our strategy. We believe this year's budget is sensible; it is a reasonable response to threats to national security and to the requirements of the military strategy of the United States.

THREAT

The US military posture -- the ability to protect US interests -- is affected by many variables. Growing Western interdependence and Third World instability are dynamic influences on national security. While we were restoring our strength, the Soviets were not standing still. The momentum of the Soviet military buildup, unequalled in peacetime, will carry Soviet force expansion and modernization programs well into the

1990s. With this pace of modernization over the last ten years, the Soviets have produced three times as many aircraft and four times as many tanks and other tracked vehicles than has the United States. They also have deployed a large and powerful navy. Soviet conventional forces can dominate the Eurasian land mass, endanger our vital lines of commerce, and simultaneously threaten US and allied interests in Europe and Asia. Even a limited confrontation with the Soviet Union immediately could have global implications.

The Soviets continue to modernize their strategic nuclear forces. In 1982 alone, they deployed over 1200 highly accurate intercontinental ballistic missile warheads. They deployed another 200 ICBM warheads in 1983, which will lead to the completion of a significant phase of their strategic ICBM modernization this year. All this is taking place and we have not yet deployed a single PEACEKEEPER missile. These Soviet missiles with a total of over 5000 warheads are being placed in the world's hardest silos and are linked with a redundant, survivable, and reliable command and control network to the Soviet leadership in well-protected sites. The Soviets have also strengthened their theater nuclear forces. Even as we negotiated, they deployed SS-20s at the rate of one a week and improved their theater nuclear forces in Eastern Europe. The Soviets claimed no nuclear weapons were in East Europe and that recent deployments to Eastern Europe were in

response to our deployments of PERSHING II and GLCM. The facts are that Soviet levels of new tactical nuclear systems reflect decisions made years before we deployed PERSHING II and GLCM.

Soviet military power impedes the peaceful resolution of Third World problems and contributes to regional instability in ways that could promote wider conflict. The Soviets are not the only source of turbulence in the world. In the case of international terrorism, there are many causes and sponsors. In Central America and Lebanon, centuries of injustice, poverty and violence have led to the dangerous situations that exist today. But the Soviets seek to gain from international turmoil. Together with clients and surrogates, the Soviets are attempting to weaken the ties between the United States and its allies and to establish their own patterns of influence throughout much of the Third World.

STRATEGY

The basic national security objective for US Armed Forces is to help preserve the United States as a free nation with its fundamental institutions and values intact. This Nation and its allies seek to provide security and protect our way of life by preventing war. Our strategy is defensive; it is based on deterrence. Should deterrence fail, the strategy is to restore peace on favorable terms, and at the lowest scope and intensity

of warfare consistent with our objectives.

Strategy guides the development as well as the deployment of US forces. Because of the great distances from the United States to areas of vital interests and the relative nearness of the threats to those interests, this Nation has maintained forward-deployed land, naval, and air forces since the end of World War II. These forces lend political and military strength to our alliance strategy by a visible demonstration of the strength of the US commitment -- putting potential aggressors on notice that an attack will be met immediately by allied opposition that includes the United States.

We maintain a strong, central reserve of Active and Reserve forces in the United States, ready to reinforce those forces forward-deployed with our alliances, and to protect US interests in other regions where there are no forward-deployed forces or where friends ask for help.

Because US forces will likely remain small relative to the requirements we have for them, they need to be as effective and flexible as possible. Superior training and superior equipment are required. Our forces must be fully equipped with modern equipment to give them the necessary technological edge over a numerically superior enemy. Our forces must be well-trained. Top-notch training is the decisive edge in combat effectiveness

and it allows us to get the most out of our equipment.

US commanders rely on good intelligence to warn and inform the forces and on effective and survivable command and control systems to direct their most effective use. As has always been the case, superior mobility and control of the key sea lines of communication will be essential to help make this strategy work. We have come to rely increasingly on space for command and control. However, because the Soviets have fielded the world's only operational anti-satellite weapon, space can no longer be considered a sanctuary.

Our nonstrategic nuclear systems are essential to our deterrent strategy of flexible response. These systems deter Soviet aggression by countering Soviet theater nuclear systems and by providing the capability to respond at whatever level of intensity necessary to prevent the Soviets from achieving their war objectives.

Over-arching all the components of our strategy, the strategic nuclear TRIAD and its associated command and control systems provide the strategic deterrent so essential to peace. We require modern, ready, strategic nuclear forces in sufficient numbers to make it clear to the Soviets that their war objectives cannot be achieved if they resort to strategic nuclear war.

IMPLICATIONS FOR OUR FORCES

The budget supports the strategy. Much of the budget is dedicated to the shorter-term needs of the existing forces, and supports the progress of the Services in restoring the vitality and the health of the total force. We urgently need to sustain that vitality. At the same time, the budget provides an effective, sensible program for modernization accompanied by modest growth in the size of our forces and appropriate R&D support.

The Joint Chiefs believe the proper balance has been struck -- the balance between providing for present needs in readiness and sustainability and ensuring future capabilities through modernization. Inherent to this balanced approach is reliance on our technological base. The modernization programs are jeopardized by Soviet successes in acquiring Western technology. The Nation urgently needs to protect the technology which gives us the qualitative advantages so necessary to give our forces an edge over potential enemies.

FORCE READINESS AND SUSTAINABILITY

Improving the warfighting efficiency of existing forces to deter and, if necessary, to fight at any level, intensity, and location remains top priority. We don't know when or if war

will come. The forces must be ready. The success of this Nation in battle depends critically on our ability to respond rapidly with well-trained, well-equipped, properly supported forces, and to sustain those forces. In turn, wartime readiness depends on how well the Nation performs the peacetime functions of preparing for war.

Existing forces are now more capable of executing the strategy. Under this budget the Services will continue to provide new equipment to the forward-deployed forces and to those early-deploying forces in the central reserve in the United States. Priority is given to those first to fight, to include the Reserve Component Forces. Many Guard and Reserve units are receiving first-line equipment -- including the M1 tank, the M2 Fighting Vehicle, the F-16 fighter, the Perry Class Guided Missile Frigate, and modern tactical communications equipment.

To tie these forces together, the Commanders in Chief of the operating forces and the Joint Chiefs are continually refining joint doctrine, combined training and exercises. Flying hours, battalion training days, and steaming hours will be increased over the FY 84 levels. A 16 percent increase in joint exercise funding will allow some 70 joint and combined exercises. The exercises are essential to readiness and to evaluate US strategic plans. Such joint and combined exercises have the further advantages of showing our resolve and of

improving the ability of the forces from the various Services to operate effectively with US allies.

The capability of the forces of all Services to work together effectively and with forces of other countries is a major part of our coalition strategy. This strategic imperative is manifested in our unified command structure. The key players in implementing this strategy are the Commanders in Chief of the Unified and Specified Commands, the CINCs. They are our operational commanders and provide oversight of our forces, as well as the direct interface with our allies.

Accordingly, the Joint Chiefs of Staff, in cooperation with the Secretary of Defense, are actively working with the CINCs to meet their needs. This is evident in the development of joint doctrine. The CINCs now have a direct role in the development of operational concepts. The CINCs have been deeply involved in creating this budget by personally presenting their warfighting and operational needs.

The CINCs need and have asked for a source of funds to meet urgent, near-term readiness and warfighting requirements. At present, when unforeseen requirements arise, the CINCs' only recourse is to seek funding through the Services -- a lengthy process which may not be responsive. To satisfy unanticipated readiness problems, we propose a special fund. The fund would

be managed by the Joint Chiefs who are in the best position to evaluate the urgency and priority of a request.

Another peacetime function essential to warfighting effectiveness is sustaining the forces. Sustainability gives our forces staying power both in peace and war. Forces that cannot be sustained can be outlasted, and deterrence gained by modernization and readiness becomes less credible. This budget will allow the Services to continue the progress they have made. Stockage levels are programmed to increase; and depot maintenance is improving, as are sustainability levels.

SUPPORTING OUR ALLIANCE STRATEGY

We are working to encourage our friends to improve their ability to act in their own behalf or with us in the defense of common interests. In so doing, we make a contribution to our own security. In implementing our global strategy, allied host nation support and security assistance stand as two of the most cost-effective measures. For example, better security assistance terms, and larger quantities, are urgently needed right now in Central America. Effective security assistance to this troubled region will help to improve the security situation so social, political and economic reform can progress.

STRATEGIC FORCES

The United States has placed a high priority on modernizing its strategic forces. This broad effort includes making command and control systems more responsive and survivable, improving strategic warning capabilities, and improving all legs of the TRIAD. The Joint Chiefs fully support the conclusions of the Scowcroft Commission that the nuclear weapons modernization programs are essential both for deterrence and to create the climate for meaningful arms reduction negotiations. The development and deployment of the PEACEKEEPER missile, TRIDENT submarine system, B-1B and Advanced Technology Bomber, air-launched cruise missile, and a new small, single warhead ICBM are essential programs to ensure the US strategic deterrent.

This is a key year for the United States. This Nation has delayed strategic nuclear modernization and we are now faced with the need to modernize all three legs of the TRIAD at the same time. The Soviets have built a strategic nuclear force capable of achieving their war objectives. We need a force which will make it clear to them they cannot achieve those wartime goals. The TRIDENT submarine program and the D5 missile will modernize our aging POSEIDON fleet. The PEACEKEEPER will upgrade our ICBM force to offset the imbalance caused by Soviet deployment of modern, hard-target capable ICBMs, while research

proceeds on the small missile. The B-1B will provide a survivable, responsive bomber force able to penetrate Soviet defenses well into the 1990s. We need to go ahead with these programs to assure the credibility of our strategic deterrent.

A major effort to modernize our strategic command, control and communications (C³) systems continues in this budget request. In order to assure the capability to detect and provide warning of an impending attack, sensors, command centers and their supporting communications are being hardened against nuclear effects. Our C³ systems are being designed for increased survivability as well as redundancy and improved interoperability of key command facilities.

The Joint Chiefs support the President's initiative to have this Nation employ its technological talent to seek an alternative to sole reliance on offensive retaliation. In consultation with our allies and with the US scientific community, we are exploring means which provide the hope that we can end the dominance of offensive nuclear weaponry.

NONSTRATEGIC NUCLEAR FORCES

Nonstrategic nuclear forces are a key part of our strategy of flexible response. The modernization of our nonstrategic nuclear systems with the fielding of PERSHING II, modernized

field artillery warheads, and ground-launched cruise missiles, as well as associated command and control, will improve effectiveness; reduce risks to allied territory; and improve safety and security. With the continued cooperation of NATO and the support of the Congress, the new long-range systems will serve to counter Soviet SS-20 deployments and strengthen the credibility of our deterrent posture.

CHEMICAL

The Joint Chiefs place great priority on modernizing the US retaliatory chemical munitions stockpile. US forces are improving their ability to defend against chemical attack, but the Congress must clearly understand that the lack of a modern chemical retaliatory capability will have our forces fighting at great disadvantage. Additionally, unless we take steps to modernize our own chemical munitions, we provide little incentive to the Soviets for a meaningful, verifiable arms control agreement prohibiting chemical weapons. This budget provides for long leadtime items and facilities in order to begin production in FY 86. We urgently need to move forward in the production of modern chemical munitions to make our chemical warfare deterrent credible.

NEGOTIATIONS

The Joint Chiefs fully support efforts to gain genuine,

mutual, equitable and verifiable reductions in armaments. Arms control and other related negotiations are being pursued with the idea that equitable and verifiable agreements can contribute to security at reduced force levels. Arms control should not be viewed as a substitute for force modernization; rather, arms control and other defense efforts should be mutually reinforcing.

Any agreement is only as good as the willingness of the signatories to comply with the obligations assumed. Soviet violations or probable violations of provisions of several agreements presently in force show a disturbing pattern of Soviet behavior. This behavior must be taken into account in the development of US defense programs and approaches to arms control.

CONVENTIONAL FORCES

In this age of nuclear parity and with conventional and low-intensity conflicts widespread throughout the world, conventional forces are the mainstay of our force structure. In this budget, land forces are being reorganized to improve flexibility and to capitalize on the effectiveness of newly introduced weapons, such as the ABRAMS tank, BRADLEY fighting vehicle, APACHE helicopter, and Multiple-Launch Rocket System (MLRS). Improvements to and modernization of Active and Reserve

Army divisions, to include the new light division concept, will enhance global flexibility. Naval forces continue to build toward a 600-ship Navy with 15 carrier battle groups, 4 battleship surface action groups, modernized attack submarines, and amphibious lift for Marine amphibious forces. We are procuring the best fighters flying today. We need to continue to procure such aircraft and modernized munitions as we build and strengthen the Air Force towards 40 tactical fighter wing equivalents. Modern, survivable, high-capacity tactical communication systems are being obtained to provide adequate, secure and reliable information distribution systems. This budget will also improve the ability of special operations forces to support the needs of the CINCs at any level of conflict.

MOBILITY

Our strategy calls for a rapid-reacting central reserve and the transportation to move it. Budget requests for the Navy and the Air Force recognize the importance of supporting the other Services in deploying their forces. Progress is being made to improve sealift and airlift: the maritime Ready Reserve Force is expanding, the purchase of KC-10As is funded, C5A improvements are underway, and KC-135 reengining and conversion of fast sealift SL7s are well-along and need to be kept going. The Army

and Marine Corps have taken measures to improve the capabilities of their forces to deploy. For instance, maritime pre-positioning for the Marines and the Army's light divisions will improve their mobility.

PEOPLE

No matter how good the strategy or how excellent the equipment, good people will remain the heart of our defense forces. Well-trained, highly motivated Service members are fundamental to combat readiness. This Nation has very good people in its Armed Forces today because of the Nation's renewed pride and faith in those people and the willingness to pay the price for adequate security. The people in our Armed Forces are willing and ready to go wherever this Nation asks them to go to protect our vital interests. Their tasks are difficult and dangerous. Very much a part of their willingness and readiness to do these difficult tasks is the sure knowledge that we as a Nation will provide for their needs. The men and women in uniform need to know we will give them the best possible equipment and training for their difficult tasks, and they need to know this Nation will provide reasonable pay and compensation for them and their families.

There are a number of proposals being studied now with respect to compensation and retirement. I urge the Congress

in reviewing these issues to remember the unique demands of military service. The Armed Forces need to have confidence that trends will not be set in motion that will erode pay and other benefits or return the forces to the unstable personnel picture of the 1970s. In the case of retirement, it is not a pension system; it is an integral part of a lifetime, career compensation program. It is a means to shape the age and skill mix of the force. The military profession is still a young person's calling and the retirement system for the Active and the Reserve Forces must account for that.

CONCLUSION

As the Congress considers the Defense Budget this year, I urge the members to remember that crises too often give little warning of their approach. Orderly preparation is not possible once growing tensions indicate immediate danger. An Army, Navy, Air Force and Marine Corps -- in being and constantly maintained in readiness -- support the other elements of our national power, give weight to diplomacy, and deter aggression.

The Soviets will not stand still. They will continue on the path they have begun, fielding increasingly capable forces on the land, on the sea, in the air, and in space. Our Nation has no plans to match the Soviets weapon for weapon, and the Joint Chiefs do not suggest a neglect of the other elements of

our national power. However, this Nation simply must do what's needed to be done to counter the Soviets with forces which deny the utility of Soviet military power for coercion or war.

The Joint Chiefs of Staff believe that our strategy provides this Nation with a sensible approach to preserve the peace and protect our national security. It is a strategy which makes it clear to potential aggressors they cannot achieve their goals by war or by the threat of war. The success of our strategy will continue to rely on the ability of the Nation to provide ready, modern forces. The Joint Chiefs believe that the budget for FY 85 will do that. This budget provides the necessary resources to assure the revitalization of our Armed Forces and the continued effectiveness of our strategy.

Senator ANDREWS. The Secretary has been called out by a call from the White House, I am told. Calls from the White House during discussions of the defense budget in this committee are not unusual. But I think the proper thing to do is to suspend until the Secretary comes back.

Senator GRASSLEY. Mr. Chairman, do we have any word on whether he will be back?

Senator ANDREWS. I was told it is only 2 or 3 minutes, but it has already been about 5. I would imagine the Secretary will be back. I do not know whether he is thinking of the fact that I happen to be sitting in his chair instead of Senator Domenici.

Senator BOSCHWITZ. Mr. Chairman, why do we not ask General Vessey some questions? Perhaps some of the members have questions to direct at General Vessey.

Senator EXON. Mr. Chairman, there may be some questions of General Vessey. Could we not proceed?

Senator ANDREWS. I think that would be fine. I want to hold mine for the Secretary, but if there are questions for General Vessey we will go down the list in the order that individuals appeared. Senator Riegle.

Senator RIEGLE. Mr. Chairman, as long as we are into kind of an ad hoc procedure right now and we do have General Vessey here, I assume the Secretary has been called out about the events in Lebanon which, from what we gather, are deteriorating, I would be interested in knowing what you can tell us about that situation now, what the latest reading is from a military assessment point of view as to both what seems to be taking place, the safety of our forces in Beirut, and what you can tell us about that situation which is, of course, of enormous interest to everybody here.

SAFETY OF FORCES IS COMMENSURATE WITH THREAT

General VESSEY. As one can see from reading the newspapers, it is a very complicated situation. First, let me deal with the safety of our own forces. A great deal has been done to make sure that the safety of our forces is commensurate with the threat that now faces them in that part of the world.

Second, I would commend to you two articles that were in the newspaper that I read this morning and yesterday which help describe the situation. One is Stephen Rosenfeld's article in the Outlook section of the Post yesterday, which is well worth your reading. The second one is in the New York Times today, which recounts President Gemayel's eight-point speech of late yesterday.

It is quite clear the Syrians are doing everything they can to disrupt the Gemayel government and prevent it from getting control of its own country. There has been massive shelling by Syrian-supported forces into Beirut. There has been fighting in west Beirut between the army and some of the Moslem militias. The army has held together, according to the reports that we have had. It still remains an institution that represents all the confessions in the country.

President Gemayel laid out an eight-point program yesterday to get the political progress moving. Of course, that is absolutely necessary to solve the problem.

CONTINGENCY PLANS AVAILABLE FOR MOVING TROOPS

Senator RIEGLE. If the situation were to continue to deteriorate—and one hopes that that will not happen, but that seems to have been the pattern thus far—if that were to continue, do we have contingency plans to move our forces out, if they were to be placed in a new kind of jeopardy?

General VESSEY. We have contingency plans to take care of our forces, yes, Senator Riegle.

Senator RIEGLE. I would prefer to hold my other questions until my turn comes with the Secretary, Mr. Chairman.

Secretary WEINBERGER. Mr. Chairman, could we have just 2 minutes to confer here?

Senator ANDREWS. Certainly.

[Recess taken.]

Senator ANDREWS. Mr. Secretary, initially perhaps you might want to share with the committee anything about the emergency that has come up that obviously necessitated the telephone call, if you can.

Secretary WEINBERGER. I am not in any position to go into anything other than the budget at the moment, sir. We all have limitations to our authority.

Senator ANDREWS. I totally understand that, Mr. Secretary. I wanted to give you that opportunity because of some inquiries of my colleagues on both sides.

Let us get back to the budget, Mr. Secretary. Based on the obvious gravity of the situation in Lebanon and other parts of the world at this particular point in time, it is not just the dollars we are spending but the effectiveness of what we are doing. Certainly, Mr. Secretary, as we begin to consider the quantity of money to be

spent by our Government for defense purposes in fiscal 1985, we have to look at the quality this money will buy. Time after time in the past year, we have heard of Defense Department waste and inefficiency as well as weapon systems which fail to work. I could cite numerous examples, but I would rather turn my attention briefly to a Defense Department program where it is possible to get more quality for less cost.

MANDATED WARRANTY COULD SAVE BILLIONS

In your chart 18, Mr. Secretary, you pointed out how proud you were of your activities to curb waste, fraud, and abuse. You said you were going to save \$1.6 billion in the procurement of spare parts. As I am sure you know, the Air Force recently made a decision regarding future purchases of derivative fighter engines. What you may not know is that General Skantze has stated that the cost of these engines may well be reduced by savings of close to \$2 billion due to a congressionally mandated warranty situation, a greater savings than the savings that you were talking about in your chart presentation. This marks, as you, I hope, know, the first time that warranties were required by law for a major Department of Defense purchase. Not only did the two competitors meet the minimum requirements, they both offered warranties that exceeded the legal requirement. Last year, the Defense Appropriations Subcommittee again held hearings on defense warranties. In November, Congress enacted legislation that requires warranties to include all new major weapon systems.

Because of what you put in your charts, Mr. Secretary, pointing with pride to the \$1.6 billion savings, and because of what General Skantze said are the savings from just the beginning of the warranty application, you can imagine my surprise when I looked in the proposed budget that you sent to us last week and found a clause that would eliminate the requirement for written guarantees.

A few weeks ago, Mr. Secretary, I wrote you a substantive letter seeking answers about how you were going to implement the warranty requirements, as well as questioning the necessity of a 90-day waiver. So far, I have not gotten an answer, nor have I received a reply from a letter written 2 weeks ago to the Deputy Under Secretary for Acquisition Management.

In addition, Mr. Secretary, no written explanation has been received by our Appropriations Committee as to why the 90-day waiver has been invoked. The law specifically states, and I am quoting from it:

The Secretary may waive the requirements of subsection A, in the case of weapon systems, if the Secretary determines that the waiver is necessary in the interest of national defense, or would not be cost effective; and, two, notifies the Committees on Armed Services and Appropriations of the Senate and House of Representatives in writing of his intention to waive such requirements with respect to such weapon system and includes in the notice an explanation of the reasons for the waiver.

Now, Mr. Secretary, those of us in the Budget Committee are intensely interested in how we can save dollars to apply against the deficits. Most of us are also interested, as you are, in having the strongest possible national defense. We are wondering, when we have a system that makes savings such as this, Mr. Secretary, just

what is the justification for this 90-day waiver, and is the justification based on defense needs or on cost effectiveness?

Secretary WEINBERGER. Mr. Chairman, there are two or three points that I think we ought to make in connection with that. Generally, waivers cost more—not waivers——

Senator ANDREWS. They cost more——

WARRANTIES HAVE TO BE PAID FOR

Secretary WEINBERGER. Not waivers, the guarantees, the so-called warranties. You have to pay for them, which is understandable, because they involve potential liabilities for a number of years.

There are some situations in which they are a very good thing to have. If you can get them in a cost-effective manner, they are very useful. We have had those in the past and expect to get them again. We are also complying fully with the provisions of section 794 of the Appropriation Act. We had a draft guidance that implements that guarantee requirement. It was given to all of the elements within the Department. We asked for their comments back in mid-January. We published all of that in the Federal Register on January 20 for the public to see.

We did have on December 16 the Deputy Secretary at that time sign a general waiver of the warranty requirement because of the requirement of the additional cost that would add, if you put it in suddenly, without any consideration of the existing contracts or the existing pending awards.

Senator ANDREWS. Mr. Secretary——

Secretary WEINBERGER. If I could just finish, Mr. Chairman.

We are completing the final policy guidance within that period that was set by the temporary waiver. We will not make any extension of that waiver authority. But the short of it is that we are complying with it. You can occasionally save money by warranty. You occasionally pay very much more to get a warranty.

The Air Force engine contract which you cited was one in which we required that a warranty be included. And one of the decisive factors in the award was the difference between the warranty provisions in the two contracts.

I am not saying that warranties are not and cannot be a good thing. I am saying it is like anything else; you have to pay for it.

Senator ANDREWS. Except for the fact, Mr. Secretary, that we drafted the warranty, of course, on the jet engines in the same fashion we did for the other weapon systems. It is interesting to see the Air Force coming in after they fought us every inch of the way. It is like the fellow who went to the altar with the shotgun at his head now clasping the child to his bosom, saying it's just wonderful. Yet, the rest of the Defense Department seems to say no way is this going to work.

Secretary WEINBERGER. No, I do not say that at all.

WARRANTY PROVISION BEING PUT INTO EFFECT

Senator ANDREWS. In other words, you are not trying to remove the warranty provision?

Secretary WEINBERGER. No, I just finished an answer, Mr. Chairman, which I did finally have the opportunity to give the full answer. And that answer is that we are putting into effect the warranty provision. We are not going to make further waivers of it. You should know, however, that there are situations in which it will cost us more to get a warranty.

Senator ANDREWS. In other words, you buy a weapon, and it costs \$10 million without a warranty; but it would cost \$11 million with a warranty?

Secretary WEINBERGER. Well, I do not know what the exact figures are, but—

Senator ANDREWS. But something in that neighborhood?

Secretary WEINBERGER. I do not know if it is in that neighborhood or not. But you are not going to get anything free. If you are going to buy continuing liability beyond the normal period without a warranty, you are going to have to pay for it. And sometimes this is very cost effective, but sometimes it is not.

Senator ANDREWS. In essence, what you are telling the committee, Mr. Secretary, is that to buy a weapon that will not work you can get it for a little less than to buy one that will.

Secretary WEINBERGER. No, it is not one that will not work. It is a question of the value of the warranty and what the warranty says. There are all kinds of warranties. I am sure you know from your own personal experience that you will see something advertised that has an unlimited warranty. Usually it is against some peril that never occurs. It is like an insurance policy. You have to be very careful as to what it says and to make sure that it is useful. Just a warranty labeled a warranty is not automatically going to give a savings.

But I am not saying for a moment that we are not going to put it in effect; we are. I am saying it will provide some savings. Wherever we can get it, we will. But, if we are going to have a warranty required on each situation, we will be paying for it.

CLOSER ATTENTION SHOULD BE PAID TO CONTRACT IN THE BEGINNING

Senator ANDREWS. But let me point out, Mr. Secretary, that part of the reason for the deficit we are in are antics like the nonuse of warranties when we bought the C-5. As you will recall, this Congress was called upon to spend \$1.4 billion to replace those wobbly wings that, had we had a warranty, would not have occurred. Frankly, I think if the Defense Department had ordered a reputable contractor—and certainly they were built by a reputable contractor—to lighten that wing spar and a warranty had been in place, the contractor would have said heck no, it's not going to work. We did not have a warranty in place. We had some critical cargo carrying planes that were not usable for a while. We had to come back for a billion-dollar-plus fix.

Secretary WEINBERGER. All that is right, Mr. Chairman. It happened long before I got here. And I suggest to you it is not so much a warranty that would have fixed that. But, what would have fixed it was a far closer attention to the management of that contract and a far better contract in the beginning, not just necessarily including the warranty.

I have no desire to argue with you about the value of warranties. They can be very valuable.

Senator ANDREWS. I am going to have to quit while I am ahead. Frankly, people back home do not send us to point with dissatisfaction and carp that you insinuated a moment ago, Mr. Secretary. They send us down here to fix the programs that do not work. And we think warranties are a good fix.

Secretary WEINBERGER. We all have exactly the same goal.

Chairman DOMENICI. Mr. Riegle.

Senator RIEGLE. Thank you, Mr. Chairman. Mr. Secretary, has President Reagan asked to meet face to face with Soviet leader Andropov?

Secretary WEINBERGER. There have been letters sent, and I am sure the State Department would be glad to give you whatever details are available.

Senator RIEGLE. So, you are not sure one way or the other?

Secretary WEINBERGER. I am sure, but I am not sure that this is the proper forum nor am I the proper person to discuss it.

SOVIETS PUT OUT BOOK EXACTLY LIKE DOD'S

Senator RIEGLE. I would hope that that kind of meeting could take place. I was one of nine Senators that had the opportunity in August to meet with Chairman Andropov in Moscow. I am sure you are familiar with this particular book, which I would like to just draw to your attention. This is the book that the Defense Department puts out on the assessment of the Soviet threat. This is the 1983 edition. When we were meeting with Andropov and the other Russian officials, it turns out they put out a book that is exactly like the book we put out, which is called "Whence the Threat to Peace." But this book, it turns out, describes the American military power as being something that they are greatly alarmed about, just as the book that you put out describes the Soviet power.

I must tell you that the nine Senators that were there were, I would say, surprised and interested to find that you had exactly contrary views, where one side seemed to view the other as having overwhelming military momentum and strength. It seems to me that, if we could get the principals—and I do not mean underlings; I am talking about the principals now—whether the President and the head of the Soviet state or, for that matter, yourself and the head of the Russian defense establishment get acquainted, sit down at a table and become knowledgeable of one another and discuss these things, maybe we could find a way to reconcile these differences.

In your book you certainly paint the Soviets as being someone to greatly fear. And they do precisely the same thing about the United States in their book. It seems to me that, maybe a face-to-face meeting is one of the useful ways that we could try to work our way through this before we end up not just either burying ourselves under financial costs that we cannot afford, with this massive arms buildup, but some kind of miscalculation down the line, where we actually have a war that no one wants, particularly with nuclear weapons.

In checking, the best data that I can get indicates that presently we have about 8,800 nuclear warheads that are currently operational. Would that number be roughly accurate?

Secretary WEINBERGER. I do not know about the precise number. The problem that we have to deal with in that is the degree of modernization, accuracy, usefulness, and the effectiveness of the launcher system. And you do not get any of those characteristics by just using raw warheads.

SOVIETS BOOK PRODUCED BY REVERSE ENGINEERING

The other thing is that I think that book that you are referring to of the Soviets was produced by a process we call reverse engineering, in which they simply look through all of the facts as we have gathered them about their systems and attempted to reduce the impact and the effectiveness of the Soviet military power book. They do not use any kind of considerations with respect to modernization. They do not tell you that 75 percent of their warheads on launcher systems are less than 5 years old, while 75 percent of ours are on launcher systems that are more than 15 years old. They do not talk to you about accuracy, an accuracy that they have developed by stealing our technology. And they do not talk to you about yield. And they do not talk to you about the fact that they have hardened their targets, that they spend an immense amount of money on civil defense, and that their whole doctrine connotes that they can fight a protracted nuclear war and win it because they have the ability, due to the modernization that they have gone into, to outlast anybody else.

So, sitting down and talking is fine. Our first problem, of course, is to know how to address the letter. We do not know whether to send it to Occupant of the Kremlin, or what. But ultimately there can and will be, I hope, conversations and negotiations.

Senator RIEGLE. Did I just understand you to say just a second ago that the Soviets today could conduct a nuclear war and win it?

Secretary WEINBERGER. No. I said that is what they are planning to do. I said that is their whole doctrine. We do not think a nuclear war can be won, and we do not think one should ever be fought. What I am saying is that we have to look at their intention, at least with the responsibilities that I have.

And their intentions, very clearly, come through, from the amounts they have spent on offensive weapons, from the amounts they have spent on defensive systems, including civil defense—and some people say, well, it's not very effective; and you can argue that, but the expenditure they make on it is important—and then you look at their doctrine from the few booklets and pamphlets that we are allowed to see. And you can tell that is clearly what they are planning for.

I am not saying that they can do it. But the fact that they are planning for it is the critical thing.

Senator RIEGLE. Let us pin down what we are planning to do, which is the point of my question. I want to ask again the question I did not get an answer to, Mr. Chairman, and the Secretary gave a long response. That is, as I understand it, we presently have about 8,800 nuclear warheads operational. Now, is that—

Secretary WEINBERGER. I can get you the number. I can get you the exact number, but the other factors are the critical ones.

Chairman DOMENICI. Mr. Secretary, I am going to let you answer. But, Senator Riegle, I really do not think you ought to presume that the rules have been changed. I think at least you ought to inquire. I am glad to let you ask the question. But just because you did not get the answer you want does not mean we automatically extend people's time.

Senator RIEGLE. I thank the chairman. I am not searching for a particular answer. I am just searching for the answer.

Chairman DOMENICI. I understand, whatever.

RAW WARHEADS ARE WAY TO MEASURE

Senator RIEGLE. Let us assume it is approximately 8,800, Mr. Secretary. I mean, you have many people here that ought to be able to give us that number. But, as I understand your budget request, you are proposing to take the figure up from roughly 8,800, which it is today, and that is operational nuclear warheads, to a figure of 14,000 warheads by 1989. And what I am trying to establish here—and all I want is a straight answer so we can have it on the record—and that is, to what extent are you proposing to increase the number of nuclear warheads on our side from today's level to the figure that you project by 1989?

And I get the figure, roughly, you want to build over another 5,000 and have those on line in addition to what presently exists. I wonder if those are the correct numbers.

Secretary WEINBERGER. No, I do not think they are, Senator.

The point that you are overlooking is the numbers that are coming out, the Titan missiles coming out, the recent decision of the NATO ministers to take out over 1,400 warheads spread over a number of years. We will get you the exact numbers. But what we have got to do is a modernization program. Raw warheads is no measure at all. You have got to look at their ability to use them, their effectiveness, their yield, their accuracy. And none of those things come through in any kind of measure of warheads only.

Senator RIEGLE. If I may just say, I am quite happy to get into that next. But we are going to be here for probably the next 2 hours. I am wondering if someone in the meantime can at least get us the number, the raw number, so we can start with something that relates to what you are asking us to do. Could I ask that that be done before we finish this morning?

Secretary WEINBERGER. Let us see what we can do; yes.

Senator RIEGLE. Thank you. Thank you, Mr. Chairman.

Chairman DOMENICI. Senator Grassley.

Senator GRASSLEY. Thank you, Mr. Chairman. Mr. Secretary, I know as a Budget Committee we make broad budget policy. But it seems like, when we see systems not working as they are intended to work or things costing more than we anticipate they will cost, that that ends up being a problem for us here on the Budget Committee.

I would like to bring up as just an example the Aegis system. I read in your annual report to Congress for fiscal year 1985 what the mission of the Aegis system is all about and what it is supposed

to do. I bring this up because we are projected to spend, including on the CG-47's and the DG-51's about \$80 or \$100 billion on this. I have a recent "Dear-Colleague" letter that Congressman Smith, a Republican from Oregon, sent to all of us on February 3. I am sure you probably have a copy of it as well.

Secretary WEINBERGER. No, I do not, Mr. Grassley.

REPORTS DO NOT JIBE ON AEGIS SYSTEM

Senator GRASSLEY. I am going to quote just a little bit from it, but I do not want to read it all. He takes to task the testing of the Aegis. He says: "5 months have passed since I began investing the operational performance of the U.S.S. *Ticonderoga*. I have had the opportunity to view firsthand the operational test results stemming from tests of the Aegis system performed between April 1983 and September 1983. All of the evidence presented to me has me concerned that a serious mismatch exists between the Navy's publicly stated performance of the U.S.S. *Ticonderoga* and the Navy's own test results as revealed in their secret operational evaluation reports."

And then one last sentence: "The operational test performed to date clearly indicates that the Aegis system advertised as a shield of the fleet"—and that, I think, quotes from your report—has fallen far short of its expected capabilities encountering antiship missile threats to surface ships.

Now, I think Congressman Smith makes a very serious charge in this letter. The letter says that the Navy's own test data says the *Ticonderoga* does not work. Yet, the Navy is telling the Congress and the public that it does work wonderfully. These two stories seem to be implying that something is being misstated. I would appreciate your comments on the situation.

Secretary WEINBERGER. I have seen the reports comparable to the one that you have been quoting, but the important point about them is that they are not the reports that are in any sense either official or, to the best of my knowledge or the Navy's knowledge, accurate. The Aegis system is a complex system of great importance. It can acquire hundreds of targets in a very short time and not only locate them but differentiate them and guide the fire toward them. It is one of the major factors in protecting the fleet.

There has been continuous sniping at the *Ticonderoga*. There was one utterly ridiculous report that said it was so heavy that it would not float. I happen to have been down at the launching of the ship and am able to tell you personally that it floats and floats very nicely.

The system is an extremely important one to add and to have. The reports that we have do not jibe in any way with the adverse reports that you are mentioning. It is a valuable addition to the fleet. It is something that can greatly assist in protecting and saving ships from the air attacks they will inevitably face when they go into dangerous areas.

Senator GRASSLEY. I think the issue is that we are getting two conflicting reports, the Navy's publicly stated performance and the Navy's own tests. I only can rely upon Congressman Smith on that. But I think it is very important that we know the answer to this.

We are talking about billions and billions of dollars for a program that might not work. Yet, we would be buying it nonetheless.

It is also important that we are now right back where we started last year. Last year you told us the defense budget was not underfunded. We heard an analysis from Franklin Spinney that it is underfunded. This year we hear from the Navy that the *Ticonderoga* works beautifully. And then we have Congressman Smith, who says he has investigated and seen all the test data that is available. He tells us that the Navy's own data says it does not work. It seems that we have not made a whole lot of progress in the last year in solving questions like this, including this one. If the *Ticonderoga* does not work, then we are going to have to fix it. Of course, fixing it is going to cost money. And that means that the cost estimates are wrong. And then pretty soon we are in the situation that Spinney has described: cost changes in the outyears prevent achievements of the original cost projections. And this is precisely how the pressures build up both on defense and the budget and, of course, in the entire Federal budget.

One final reason why we have to resolve this matter of the *Ticonderoga* is because the only one that exists, in my understanding, is presently off the coast of Lebanon protecting the fleet. Of course, it has Americans on board. This could be a very serious problem, one which we may not be prepared for.

I guess you say the data is wrong. I am not saying which data is right, except that we have two conflicting reports. We have publicly-stated views of the Navy. And then we have other reports, secret operational evaluation reports that state otherwise. I am looking at it from a budgeteer's standpoint. We have got to know what these costs are. We have not made a whole lot of progress, as far as I am concerned, in the last year, Mr. Chairman.

"TICONDEROGA" IS WHERE IT IS BECAUSE IT DOES WORK

Secretary WEINBERGER. Senator, you have answered your own question partly, because the *Ticonderoga* is working, has worked, and has continued to work very well. It is where it is, off Lebanon, protecting itself and the other ships in the fleet because it does work.

You are going to have—I do not know what are the secret data to which you are referring—in any kind of a shakedown cruise or an initial evaluation, some suggestions of things that can be improved or done a little differently. That is the purpose of a shakedown cruise. It is the purpose of the final evaluation and the operational evaluation test. But that is not to say that it is not working. It is working and working extremely well. I am grateful and I think I might say you should be grateful that it is where it is and that it is working because it is protecting the ships against a very real threat. And it would not be out there if it would not float or if it did not work.

So, as far as cost estimates and overruns and projections of costs for the future, there are some interesting historical studies based on past data that are available for anybody to look at. The important thing is to realize the number of factors and conditions that have been changed, including acquisition improvements and very

close and careful management. So, these are the reasons we are confident that a lot of these factors have been improved.

Chairman DOMENICI. We are going to be in recess. Your time has expired, Senator. We are going to be in recess until 11 o'clock.

[Recess taken.]

Chairman DOMENICI. We are going to proceed. Thank you, Mr. Secretary. Senator Biden.

Senator BIDEN. Mr. Secretary, General, we have had nearly a third of our significant witnesses before the Budget Committee in trying to help us in what our task is. With all due respect to my colleagues who just asked questions about contract policy and the Aegis, very important questions for the Congress to resolve, I am not sure this committee is best suited to do that.

The previous two persons who testified before us, the Secretary of the Treasury and the Director of the Office of Management and Budget, and now you, the Secretary of Defense, and you, General, representing the Joint Chiefs of Staff as support for the Secretary of Defense, some of us have raised the question that we should take the President's offer seriously of attempting to deal with down payments on budget deficits. You are an old, to use the expression I heard here this morning, an old budgeteer.

Secretary WEINBERGER. Yes.

TRUCE IS NEEDED

Senator BIDEN. You know what that means. As much as I have disagreed with some of the things and agreed with others that you have done, I really do think that we do need a truce. We need not only a truce in Lebanon, not only in arms controls, we need a truce among ourselves. And you and your department are the chief player right now in the truce.

Let me expand on that point very briefly and then ask one question I have for this first round, and then I will yield and wait until the second round.

Last year the members of this committee warned that your proposed budget was too large. We urged a cooperative effort to devise the best possible configuration at a real 5-percent growth level. I am using you in an editorial sense, you in the Defense Department refused. The net result was just under 5 percent and perhaps not the best mix in cuts. Perhaps we in the Congress did not do our job. We are not experts in the Defense Department, although some among us, like Senator Andrews and others, are experts on defense systems. I am not. Nonetheless, because we were unable to reach some kind of agreement on prioritizing with a lower number, we made judgments in the Congress.

Once again you are proposing a 13-percent real growth, and we are balking.

By the way, there is no doubt in my mind your budget will be cut. Rightly or wrongly, the defense budget is going to be cut. I can assure you of that. If there is anything I have learned in 11 years in the U.S. Senate, if that does not happen, then I really have misjudged this place and the mood of the public. And you have been around longer than I have, Mr. Secretary, and had significant jobs

for a long time. I doubt whether anyone in the Defense Department believes that 13 percent is going to survive.

My question is this. In the spirit of truce, are you willing to let us in the Congress make the judgment on how to cut that budget? Or would you be willing to consider, if not here, at a later date, a best allocation of the additional defense dollars at a lower level, prioritized for us? We know you want it all. We know you have already made that judgment. You have cut. If we had the best of all worlds, I could envision a 25-percent real increase in defense spending. But you have cut it down to 13. I do not think I am being partisan when I say it is going to be cut below 13.

What I would like to suggest to us is that maybe you give us your judgment on what are the places—as unwilling as you are. Put it another way. What priorities, what is the first of the increases and what is the last of the increases that you are proposing for us? That is the only thing we in the Budget Committee can really look at, in my view.

VERY SERIOUS GAP MUST BE CLOSED

Secretary WEINBERGER. Senator, we all have our responsibility. You certainly have yours as a member of the Budget Committee. I am sure you are exercising those in a perfectly responsible manner. I have mine. And I think you would be quite disappointed in me if I told you something that I did not honestly believe with respect to the amount of growth that is required and the amount of funds that is required to regain the ground that we lost through policies that I think were wrong and did bring us down. There are all kinds of good reasons for those policies, but the fact is they left us with a very serious gap. We have to close that gap.

I do not think that it is very useful or very profitable to measure those things by percentage rates of increase when you are talking about a growing threat and a certain number of things you need and a budget that requires close to half of it dedicated to pay personnel related costs.

As far as priorities are concerned, you can take any one of a number of things if you want to do that. For example, you could cancel all of the M-1 tanks that we have requested for acquisition this year. That would save you about \$1.8 billion. It would leave us with tanks that we know are inferior to the Soviet tanks. It would happen to cost you about 11,000 jobs also. You could do that.

Senator BIDEN. Let me interrupt you. We could obviously do any of that. But I am asking for your help in telling us what are the things you could least afford to cut.

Let me make a political analogy, if I may, and I know you understand politics a bit. It is a little like me sitting at the end of a campaign and knowing I only have \$100,000 to spend, and my opponent is creeping up on me and pulling ahead of me. And they sit in front of me and say: now look, Biden, you can cancel your television. You can close your headquarters. You can take your people off the street. Or you can stop your brochures. Now, you only have \$100,000. You have got to do one of them, Biden. Now, what are you going to do?

Now, I would rather make that judgment than some underling out there making the judgment for me. And, if I can make the analogy, I am your underling here. If you do not make the judgment, we may make a mistake.

Secretary WEINBERGER. Senator, you have correctly stated in your example a period that is vital, and that is the end of the campaign.

What you have got here, we are 3 full days into this budget, 3 full days.

Senator BIDEN. I get the message.

Secretary WEINBERGER. All right, sir.

Senator BIDEN. I hope we do not waste too much time at the beginning of the campaign.

Secretary WEINBERGER. We need it all, Senator.

Chairman DOMENICI. Senator Symms.

Senator SYMMS. Thank you very much, Mr. Chairman. Mr. Secretary and General Vessey, Dr. Feldstein made a very important point last Friday. And I think he has been known as one of the administration that does not like deficits, but he made the point that during the Kennedy administration we spent over 50 percent of the budget on defense; and during the Reagan administration we are spending 25 percent and just the opposite with respect to people programs. Yet, somehow we managed in the Reagan administration to have credit for being those people that are only interested in defense and not interested in people.

I was interested this morning in your comments earlier before this meeting about the uncovering of the mistakes. And then you pointed out here in your testimony this. I would only encourage you to keep repeating that story, because that is not well known and widely understood out around the country. For whatever reason, those stories do not seem to manage to get in the press very much, that it is our own Defense Department that has been exposing some of the mistakes of the past. So, I would encourage you to keep that going.

There are two questions that I would like to ask you, three actually, and I do not know whether there is time.

STRATEGIC IMPLICATION WOULD BE HORRENDOUS

No. 1, with respect to the Soviet potential ABM system in space and our potential for an ABM system in space, the Defense Daily of January 23 makes the statement that the Soviet Union is probably 2 to 5 years away from having some kind of a space station, antiballistic missile defense system. It makes the statement that a senior U.S. official said that we would probably be twice that far away.

What kind of a strategic implication would this mean, in view of what you said here earlier this morning, that the Soviets have a mentality to plan to fight a win-war nuclear strategy? What kind of a strategic implication is that, if that is the case?

Secretary WEINBERGER. Absolutely horrendous, Senator. The problem is that, if the Soviets develop a system for rendering our missiles, that are one of our principal parts of deterrent, the way in which we maintain the peace, if they found a way of rendering

those impotent, they would have a situation in which they could quite literally blackmail the world. And the fear is that, because they have been working on this for quite a long time, since 1967 actually, and we have not, that they do have a lead in this area.

I do not pretend to give any kind of date as to when they could have an operationally, effective system. We all have been working on, and we all had under development we do not now because we gave it up—a system that was less effective, a ground-based system, at Grand Forks, using various methods of what we call traditional ABM. But the Soviets have been working in that area and have a great deal deployed around Moscow and have built a very large radar that violates the ABM treaty. But, they also have been working, as you said, in space. And they have been working on a system that could catch our ballistic missiles at various stages of their flight, not just the terminal phase. If they develop that and they develop it alone, they would quite literally put themselves in a position where they could blackmail the rest of the world with the idea that any form of—the principal form—deterrent would be rendered useless. And we would not have a comparable capability for their missiles.

So, I think from two points of view it is absolutely essential that we work on this. The first is the one that you have just cited, that they are doing it. And, they might get there first. The effects of that could be absolutely catastrophic if their lead is very large and our capabilities are dwarfed and we have no countermeasures ready.

The second point is that, if we could develop it ourselves and get an effective system, we will have effectively removed from the world the scourge, the fear, and the shadow of nuclear weapons. Bear in mind, in the early fifties we had an absolute monopoly on nuclear weapons. We could have used it to dominate the world, and we did not in any sense. Instead, we spent our time and our treasury arming our former opponents and helping to rebuild their economies.

Senator SYMMS. I would like to go on. Thank you very much. I would like to ask General Vessey a question before I run out of time.

I know it is difficult to ask a soldier a question about infantry weapons because, if you say anything critical about it, well then the soldier will say, I wonder how come the general does not like this weapon that he gave me.

I would like to have your comments about the Bradley fighting vehicle and the fact that I have been told by some people—how accurate it is, I do not know—that the aluminum construction or parts of it makes it very susceptible, it adds to the explosion factor if it is hit by an armor-piercing ammunition. That is question No. 1.

No. 2, would you comment on whether or not you feel satisfied with our infantry tactics where our infantrymen do not have .30 caliber rifles? Are you satisfied with the caliber that we have gone to for the long pull?

BRADLEY FIGHTING VEHICLE MEETS ARMY PROTECTION STANDARDS

General VESSEY. Let me answer the first question first, Senator. I have seen a number of those press articles about aluminum exploding. I have asked our scientists to try to give me a straight answer on that. They tell me that aluminum does not explode.

The armor that is given to the Bradley fighting vehicle is a combination of the protection that we would like to provide the troops and the weight that we can put into the vehicle. It meets the protection standards that the Army laid out for it. It is a very substantial increase to the combat capability of the mechanized infantry. It does its job very, very well.

5.56 MILLIMETER RIFLE IS GOOD WEAPON

Whether they have a .30 caliber rifle or 5.56 millimeter rifle or whatever it is, the debate will go on among the infantrymen as long as infantrymen stomp the Earth. Like any other weapon, it is a combination of the effectiveness of the weapon itself and the effectiveness of the total system. The total system is the man, all the things that he has to carry, including the ammunition that he has to carry and the weapon that he has, against the sort of terrain and enemy that you expect him to fight against. The heavier rifle will let you get longer shots when you have got open terrain and have those shots. The 5.56 will not shoot as far as the heavier rifle will accurately. But, in fact, it is a good weapon for the general run of infantry situations that the infantry is going to run into. He can carry a lot more 5.56 ammunition, for example, than he can .30 caliber ammunition.

So, most of the infantrymen think they have a good answer. There are some who will never agree. And if you went back to the .30 caliber rifle, there are many who would agree that you made a wrong move by doing that.

Senator SYMMS. Thank you, Mr. Chairman.

Chairman DOMENICI. Thank you very much. Senator Johnston.

TRANSFER OF TRUST TERRITORIES IS A CONCERN

Senator JOHNSTON. Mr. Secretary, first I have a question that you may not be up to speed on but I wish you would look into it and give me an answer if you are not.

I am deeply concerned about the administration's proposal to transfer from the Department of the Interior the future administration of the Trust Territories of the Pacific Islands, that is Micronesia. They want to give it to the Department of State once the trusteeship has ended. First, Senator McClure and I and Senator Jackson, before his death, were exceedingly concerned about this. We believe that these islands in the Pacific, Truk, Yap, Ponopay, Kwajelein, et cetera, that were the subject of such fierce fighting in World War II, which lie abreast the shipping lanes, should be either kept by the United States or at least the right of denial, the denial of other powers made clearly manifest for at least 100 years. We fear that transfer of this jurisdiction to the Department of State would mean that they would rush these islands toward independence, which has been their view all along. They are exceeding-

ly concerned about what the United Nations may think about our administration of these islands.

First of all, were you consulted about that plan to transfer that to State?

Secretary WEINBERGER. We have had no general discussions of that, Senator. I just say very briefly that I have not the slightest inclination whatever to argue with any of the points you have made thus far.

Senator JOHNSTON. I did not think you would, but I fear that if it is given over to State, you may not have the right to argue. These things may be done. I wish you would check into that, if you would.

Secretary WEINBERGER. Let me get you a status report on that, sir.

[The following was subsequently supplied for the record:]

MICRONESIA

Detailed arrangements for handling Micronesian affairs within the Executive Branch have not yet been determined. Consideration has been given to the establishment of a new Office of Micronesian Affairs, staffed on an interagency basis, and provided policy direction, under the auspices of the National Security Council, through the same Interagency Group which currently handles that task.

The proposed Compact includes the perpetual denial to other powers you have advocated, and also provides for the military access rights and options which DoD requires. In the long run, the best way to ensure retention of US military objectives for this strategic area is to build and maintain a cordial and friendly relationship with its elected governments, which also takes into account the needs and desires of the Micronesians themselves. Post-Trusteeship administrative arrangements within the Executive Branch should appropriately complement the proposed Compact by fully protecting US interests, while accommodating the changing circumstances of the freely associated states. Moreover, US policy direction toward Micronesia will continue to be developed by the Executive Branch as a whole.

AGREEMENT HOPED FOR ON AMOUNTS ESSENTIAL TO OUR STRENGTH

Senator JOHNSTON. Thank you very much.

Second, Mr. Secretary, if we come out with a budget resolution here setting a number for defense, will we be able to rely upon that number with the administration? The predicate for that question is, last year's budget cycle, where we came up with a budget resolution which we thought was agreed upon by the administration. You will recall that after it was done, the Department of Defense, namely you, were not willing to live within those numbers. Indeed, the very question, the game ending questions which Senator Biden was discussing we discussed after the budget resolution was perfected and when we met with the Defense Appropriation Subcommittee, and we could not get advice at that time as to how to fit the defense budget within the budget resolution. What will be the situation this year?

Secretary WEINBERGER. If I could give you just a bit of history, Senator. There were two or three meetings, many meetings, of course, on budget negotiations last year. I was present at least two of which the President advised leadership of the Congress—I think in one case the Republican leadership; in other case, the bipartisan leadership—that he was not prepared to accept at that time and support a lowered figure for defense that was in the Budget Committee resolution. He had two reasons for that. One was that he, to be perfectly frank about it, was not sure that that was an agree-

ment or a number which would be supported by anyone else in the Congress, at least not a majority. The second was that he felt that it was lower than we needed for the orderly recovery of our military strength.

So, he specifically exempted the defense appropriations from the discussions that were being held with respect to the budget resolution.

As it turned out, his fears were very well founded. The budget resolution was passed, and then the Congress itself in the final days went almost 2 percentage points under that for the Defense Department budget. So, the budget resolution had an effective ceiling, but it did not have any floor in it. As a result, the budget is before you this year with substantially larger request than we would have liked or we would have had to make this year.

So, I really do not want to do any predicting. I would very much hope that there would be general agreement and that the agreement could be carried out on the amounts that are essential to regain our strength in an orderly, cost-effective way. Those amounts are before you. The original requests of the services validated and completely justified were over \$16 billion higher than the budget that is before you.

GAP IS STILL THERE BUT IMPROVING

Senator JOHNSTON. I understand. I have one final question, Mr. Secretary.

Last year, preceding the MX negotiations, the administration stated that the so-called concept of the window of vulnerability was no longer operable, that there was not in fact a window of vulnerability. Is that still your view? Or is there in fact either a window of vulnerability or a gap between the defense capabilities of the United States and the Soviet Union? If so, what is it?

Secretary WEINBERGER. I think there is. The administration has so many voices that it is hard to tell, but the window of vulnerability was a term much in favor during the eighties. It was simply a method of expressing the fact that, because of the various budget figures I mentioned in the seventies, the Soviets had acquired a lead in a number of important categories, particularly in modernization and in accuracy, and that we had not done sufficient modernization.

My own feeling is that that situation is on the road to being vastly improved. The MX has been authorized. The B-1 bomber has been authorized. The new submarines have been continued, and the D-5 missiles have been continued. We are making progress on the new advanced technology bomber. We are improving our command, control, and communications. So, we are narrowing that gap. We are improving the situation. We are much stronger than we were in 1981.

But, again, you cannot take a snapshot as of 11:30 this morning and find that the vulnerability is over, the window is closed, the gap is narrowed, or whatever. The gap is narrowing. We are improving. We are on the path that will regain for us, not military superiority, but the deterrent strength that we need.

The important thing is to keep on that path. And that is what we keep emphasizing in this budget and why we feel that this budget is a vital part of that 5- or 6-year plan, a vital increment of it.

Senator JOHNSTON. The Joint Chiefs, I think, said last year that none of them would trade places as of last year with the Soviet Union in the strategic methods. You would not be prepared to say you would trade places at this time?

Secretary WEINBERGER. I think what they said was on a man-for-man basis or the manpower of the Soviets. And General Vessey could certainly go into that right now in detail. But I think there were very clear exceptions made for the Soviet missile system.

General VESSEY. That is correct. In fact, there were exceptions made for the Soviet missiles. The one thing the Soviets have done is modernize their ICBM force, and we have not. They have a significant advantage in time-urgent, hard-target kill capability that we believe is deficient in our force.

Chairman DOMENICI. Senator Gorton.

WEINBERGER'S STEWARDSHIP OF DOD EXTREMELY EFFECTIVE

Senator GORTON. Thank you, Mr. Chairman.

I would like to start, Mr. Secretary, by saying that, as I reflect on the past 3 years, it is overwhelmingly evident that your stewardship of the Department of Defense has been an extremely effective one in a number of vitally important ways. I am afraid that you will probably join with me in stating that in some other ways it has not been so effective, and I may ask you to comment on that.

You have been extremely effective, it seems to me, in turning around a trend which you illustrated at the charts, with which you began this presentation. You have been effective in restoring the substance of the defense posture of the United States. You have obviously been very effective, you and General Vessey and his predecessors, in raising the morale and, for that matter, raising the quality through high-quality recruitment techniques of the members of the Armed Forces themselves.

At the same time, Mr. Secretary, you adverted during your remarks to a number of ways in which you have not been effective in getting across your message to the people of the United States. You described, for example, the process of the budget for national defense last year from the original request from the President and from yourself through the very dramatic and substantial reductions in those requested increases. Yet, I think it is safe to say that very few people in the United States recognize that the defense budget is much different in fiscal year 1984 from what was requested by you and by the President early last year.

Your answer to Senator Biden, while it was perfectly appropriate, at least causes you to run the risk that the same thing will happen here this year.

COST OVERRUNS

You spoke of the fact of the discovery of cost overruns in spare parts particularly as being one which the Defense Department itself had discovered, that these scandals were not unearthed by

newspapermen or television reporters but by your internal operation and management of the Department of Defense. I used that when I was home in November, December, and January, in answering almost every question I received on the subject. Without exception, the audiences with whom I shared that insight, it was something that had never previously occurred to them.

I am going to pause. I have another question. But I wonder if you want to comment on the fact that you have not succeeded in getting across to the people of the United States the changes in management? You have not gotten across to them, I suspect, that most other capital investment programs, water projects, highways, and the like, are almost inevitably attended by cost overruns at least as large as those which afflict the Department of Defense. Why it is that so much of the concentration on this subject is directed at the department and what, if anything, you propose to do about it?

NOT MUCH DISCUSSION ABOUT CHANGES IN MANAGEMENT

Secretary WEINBERGER. Senator, I cannot argue with you about the latter point, the failure to secure very much reporting or very much notice of the facts that we put out repeatedly. We have a large sheaf of press releases we would be glad to share with you that call attention to these facts. We put out one the other day that reported the largest audit in the department's history, 400 auditors, going after any remaining spare parts problems that might be there. And that is a huge audit. The only notice that anybody has seen of it is in one of the trade journals, commenting adversely on the fact that the Government is apparently still on some people's backs, as indeed I hope it is in this case.

So, it is very difficult to find ways of exciting or interesting the people who report about these events and for these rather unglamorous, unexciting matters.

The other thing, of course, is that the critical aspects of the spare parts things, the things that are easiest to criticize are picked up by a number of people who make speeches or give press interviews, and so on. They concentrate entirely on a \$400 hammer, which we are the first to not only agree but we are the first to point out is indefensible. They rarely make the point that these practices have been stopped.

I do not know. Some of my colleagues suggested that, instead of asking for a new tank, we ought to ask for appropriations to buy a newspaper or a television station and publicize it ourselves. I have a feeling that this might not be all that popular, and I cannot recommend it as an absolute defense need. But you are right, there is not very much discussion or very much understanding of what it is we have tried to do. And I suppose it is because it is not very interesting or not very exciting; and the \$400 hammer, which we found is far more exciting.

Senator GORTON. Thank you for the answer, which expresses, I am sure, some of the frustrations which you have felt. Nevertheless, it is a matter which should occupy a great deal of your attention.

Secretary WEINBERGER. Absolutely.

OVERALL REQUEST WILL BE CUT

Senator GORTON. You also must know that the remarks of the chairman and of Senator Biden to the effect that you will not get from this committee what your overall request is is obviously correct. Your answer to Senator Biden was appropriate, I think, from the point of view of your being only at the beginning of the process. I must, however, express the frustration that this committee has when it does not deal with particular weapon system or the like but simply with an overall number and its inability to find out what will happen at given levels of reductions or at given levels of support from the point of view of the Department of Defense itself. It does mean that we often, last year, and I suspect this year, have to operate at least half-blind in that respect. We have to make assumptions or guesses, which are quite frustrating to us, when we cannot get specifics from the department itself as to the consequences of our decision at various levels.

DEFENSE SPENDING STIMULATES ECONOMY

Secretary WEINBERGER. Senator, we did point out many times to members individually and to the committee at least once the results of some percentage reduction and the difficulties and, in fact, inherent error of looking at the defense budget simply from a percentage increase point of view. I understand the overall problems of the committee and of OMB, and of everyone else. But you do have to look at the actual validated needs, the structure of the budget, the fact that almost half of it is for personnel, and the nature of the threat we face, all of these things. But we can, we did last year, and I have started this morning on one or two systems that tell you the impact of that and the point of making reductions of that kind. The point is always made that there is some very adverse effect on the economy of the country if we do not make these cuts. And we pointed out repeatedly that, if you cut the defense budget \$1, you do not cut the deficit \$1; you cut the deficit less than 50 cents, because you lose all of the tax revenues and you lose all of the jobs that are associated with these projects.

Again, I pointed out repeatedly that you should not do defense spending because it does stimulate the economy or that it is good for the economy. But the simple fact of the matter is that it is. It is not bad for the economy.

ALLIES FOLLOW OUR TREND ON DEFENSE SPENDING

Senator GORTON. Mr. Secretary, I am going to have to interrupt you because I am going to get cut off by the red light.

I am not certain that I agree with the economic theory behind the last statement. But that can wait for another time.

I do wish to ask one substantive question. It is clear that, at whatever level of authority is granted for national defense this year, the United States will be spending a greater percentage of its gross national product on defense than any of our NATO allies or of Japan. I wonder if you can comment on how we can get our allies in every part of the world to take a fairer share of their burden. I particularly want you to comment on whether or not de-

fense spending would be likely to be increased in western Europe and in Japan were we to reduce the growth of our defense spending. That is question No. 1.

Second, if we were to reduce troop levels which the United States maintains in Europe, please comment.

Secretary WEINBERGER. I am afraid, Senator, that on both of those questions the answer is that if we did less, they would do less. Certainly, that would be, I think, the case for troop withdrawal for of generally less support for those areas of the world. There is an assumption or some theory that, if we pull out of Europe, Europe rushes in and fills the gap. And I think anybody who holds that assumption has not had an opportunity to talk very much in Europe with the leaders or with the opposition.

It is a very difficult task for them, and the defense ministers particularly in the NATO countries understand very well that they are not doing enough. They understand that it is important that they do more, and they try. And that is one of the reasons the Soviet Military Power book was published at their request, to bring home to their publics the real nature of this threat.

TROOP REDUCTIONS WOULD ENDANGER OUR SITUATION

We would also—and this is the critical thing—endanger our own situation. If we got angry at Japan because they do not spend 1 percent of their GNP on defense and came home, that would endanger our own situation very much. And the same would be true in Europe. These gaps would not be filled in at all, because the consensus supporting the level of spending that is going on is very hard to achieve and very hard to maintain in the face of withering propaganda from the Soviets and in the face of their own desire, which is shared by a lot of people here, not to spend much money on defense.

It is a constant battle. Everyone admits that none of us are doing enough in the face of the Soviets and the threat that they pose.

But the question I have to ask is, would we be better off or worse off if we pulled out of NATO or if we pulled out of Japan and Korea? And I think we would be vastly worse off. In fact, I do not think we could exist in a world in which Europe was overrun by the Soviet hordes.

Chairman DOMENICI. Mr. Secretary, Senator Chiles was going to go next, and then perhaps we will start another round. It is now shortly after 11:30. How much time do you have? Can you remain until 12:15?

Secretary WEINBERGER. Yes, sir.

Chairman DOMENICI. Senator Chiles.

SOME ALLIES CONTRIBUTE 3 PERCENT IN REAL TERMS

Senator CHILES. Mr. Secretary, I apologize for not being here when you opened up this morning. I have had a chance to read your testimony. I was coming back from Florida this morning.

I wanted to just begin by asking you in a followup of the question of Senator Gorton. Some time back, we agreed with our allies in NATO, the vast majority of those allies, that we would contribute at least 3 percent in real terms. Which of our allies are now following that commitment? Is there anybody left that is contributing it?

Secretary WEINBERGER. Yes, there are a few that are at three or a little over.

Senator CHILES. Who has fallen out of that, if you can give it?

Secretary WEINBERGER. Britain is one. My memory is that Italy is one.

General VESSEY. They have not fallen out; they are doing it.

Secretary WEINBERGER. Yes. They have been doing it.

Some are under that. I think Germany is practically level, when you look at it in real terms. France, while not a military member of NATO, is a little over level.

We have submitted the full report to the Congress. I will be glad to get a short version of that to you.

The short answer is that some are doing it, some are not.

[The following was subsequently supplied for the record:]

ALLIED PERFORMANCE TOWARD ACHIEVING NATO'S 3 PERCENT REAL GROWTH GOAL

There follows a summary of how our NATO allies are meeting the NATO goal for 3 percent real annual increases in defense expenditures. The attached chart displays current country-by-country estimates of the percent change in real defense spending for 1980 through 1983. These figures—some of which are still subject to change—show real increases in defense spending for most countries, and weighted average increases for all non-U.S. NATO nations combined of 2.6 percent for 1980, 2.8 percent for 1981, 2.3 percent for 1982, and between 1.9 percent and 2.1 percent for 1983.

Six of our allies (Canada, France, Italy, Luxembourg, Portugal and the UK) had increases in the region of 3 percent or more in 1980. (NATO interprets "in the region of 3 percent" as any increase of 2.8 percent or greater.) The list of allies reporting such increases in 1981 also includes six nations (Canada, France, Germany, Greece, Luxembourg and The Netherlands), while Norway came close with an increase of 2.7 percent. Six nations (Canada, Italy, Luxembourg, Norway, Turkey and the UK) were also in the 3 percent region in 1982.

Estimates reported to date for 1983 indicate that four countries (Canada, Luxembourg, Norway and the UK) achieved increases in the 3 percent region, while the Netherlands came close with estimated increases of 2.7 percent.

The complete report on "Allied Contributions to the Common Defense" will be forwarded to Congress shortly.

REAL INCREASE IN COUNTRY DEFENSE SPENDING ^{1 2}

[Percent change from previous year in constant prices (excluding inflation)]

	1980	1981	1982	1983
Belgium.....	1.9	0.9	-3.3	-3.0
Canada.....	5.1	3.1	4.9	5.0
Denmark.....	.7	.6	-.3	-.2
France.....	³ 3.7	³ 3.7	³ 0.9	³ 0.9/1.5
Germany.....	2.3	3.2	-8	1.9
Greece.....	-9.4	22.8	.1	1.3
Italy.....	4.9	-5	3.2	1.1
Luxembourg.....	16.3	4.8	3.9	3.5
Netherlands.....	-2.1	3.3	2.1	2.7
Norway.....	1.8	2.7	4.1	2.8
Portugal.....	6.0	.9	.5	.4
Turkey.....	2.0	1.8	4.6	1.9
UK.....	2.8	1.4	6.4	3.0
US.....	4.9	4.7	7.6	7.6
Non-United States NATO ⁴	2.6	2.8	2.3	1.9/2.1
NATO total ⁴	4.0	4.0	5.7	5.6/5.7

¹ All of the figures depicted in this table are based on the NATO definition of defense spending and are the best estimates that can be made on the basis of information now available.

² National fiscal years agree to calendar years except as follows: Canada and the UK (April-March), US (October-September). Turkish data through 1981 are based on a March-February fiscal year. In 1983 Turkey converted to a January-December fiscal year.

³ DOD estimate

⁴ Non-United States NATO and NATO totals reflect weighted average growth rates developed using 1982 constant prices and 1982 exchange rates.

Senator CHILES. But the problem is that it looks like more are beginning to fall out.

Secretary WEINBERGER. The other way of facing that is that it is getting harder to get increases in every country of the world, including the United States.

NEED FOR CONTINUED INCREASE IN DEFENSE QUESTIONED

Senator CHILES. You mentioned that part of the problem in Europe was trying to get a consensus in their countries supporting the level of spending. I certainly recognize that. I see in your testimony where you talk about the Soviets expanding their global reach and that we must be able to meet that ability to project influence and power, especially in the Third World. I think that, while that is the strategy, there is a great concern by many of us in the Congress that, given the fact that we have enjoyed bipartisan support and we have had a consensus in the country in trying to buildup defense, that we are having a hard time articulating now what our strategy is and why we have the need for this continued increase in defense. I think we have got to explain it better than the fact that we are just going to have to match the Russians anyplace and every place that they might want to project power.

We have gone through the two-war scenario or to the one and a half. But I think we have a hard time explaining what our strategy is about how we expect to use the weapon systems we've started and where and in what instances we are going to pick the high ground.

SOVIETS HAVE DEVELOPED ENORMOUS ABILITY TO PROJECT THEIR POWER

Secretary WEINBERGER. That is one of the points of the presentation I made to the committee at the beginning. Senator, basically the answer is that this is not a world which we made. It is not possible for us to say that we will plan to fight one and one-half wars, and that will take care of deterring any kind of attack upon us or anything that would disrupt the peace. The point we make is that the Soviets have developed an enormous ability to project their power as well as a vast increase in their power.

A great deal of the area, a great many of the areas in which we have to be concerned are areas the Soviets can reach much more quickly than we can, with shorter interior lines of communication. This is true of the oil fields, for example. It is significant that the only place they have used their own troops is in Afghanistan, which is another part of the road to the oil field. So, we have to do, unfortunately, what the situation requires. Now, we can try it another way, and we tried that once. We can say that we will narrow our commitments and we will give up certain things. And that will enable us to have lower budgets.

We tried that in Korea. We said that Korea lay outside our natural perimeters of defense. And we found that they did lie outside that for about 6 months. And after that, we have had to pour out untold treasure, and lives, and everything else to make sure that

that was not area which fell into Soviet hands. And in the Pacific, that is where they are having their very greatest increases, the Soviets, in naval and air strength. They have enormous ground strength, in any event.

So, I do not think we can give up that or say that we will not have any more to do with Japan or Korea. We certainly cannot do it with NATO and Europe. We cannot do it with the oil fields. And we certainly cannot do it with continental United States or with the Caribbean. So, as I say, we are not in a world we made. We do not have anything more than we are trying to do than to regain enough strength to deter attack in these various places. And it is a very big, very expensive task forced on us by the Soviet expansion, and by the fact that in their country, without any public opinion or without any problems of expanding their military at the total expense of their civilian economy, that that is the principal opponent that we face.

It is a difficult task. I would not fulfill my responsibilities, I do not think, if I did not bring these facts to your attention.

CHALLENGE RUSSIANS IN AREAS OF VITAL INTEREST TO UNITED STATES

Senator CHILES. I think, in spite of everything you say—and I don't minimize what the Russians are trying to do—I do not think that we can expect to challenge them in every point of the world. I think that we have got to decide where the high ground is and where we intend to fight, where we have some kind of advantage, where we can bring our forces to bear.

Secretary WEINBERGER. Senator, if I can interrupt just a moment. We do not try to challenge them every place in the world. The only places that we think we have to make those not challenges but require sufficient deterrent strength to discourage them from trying are those areas of absolutely vital interest to us.

DEFENSE PRIORITIES

Senator CHILES. If we are able to maintain a national consensus on national defense, then we have to clearly lay out those risks and assign our funding priorities to the most profound risks. Could you tell us what parts of the world have the greatest risk of war breaking out, today, in your opinion, so that we might have some idea of the range of risk that we take?

Secretary WEINBERGER. It is a little hard to be comparative. But the first priority that we have is, of course, the defense of continental United States and the approaches to that. That involves a very careful examination of events in the Caribbean and in the areas off Alaska. Of course, that has to be our first priority.

NATO, with all that is implied in making sure that Europe is not overrun, and in holding the fronts there is also an equally high priority. And certainly the oilfields. But certainly so is the Pacific, where enormous increases in Soviet strength are being massed. Again, these are not areas of our choosing. And they are not requirements that we would pick or that we like. But we would be risking a very great deal if we are blind to them or if we feel that

we can ignore some of them in the hope that that will be the areas where there will not be much risk.

The more we announce, or the more we display by our action that we do not regard an area where the Soviets are very strong that is of critical importance to us, that we are putting these areas outside our defensive perimeter, the more risk arises in that area. And that is exactly what happened in Korea. And that is exactly why it is so vital that we not fall into that fatal error again.

MIDDLE EAST HAS MOST LIKELIHOOD OF BLOWING UP

Senator CHILES. Which would you say has the most likelihood of blowing up out of all these areas that you pointed out that are of vital interest?

Secretary WEINBERGER. As of this morning, the Middle East.

CONVENTIONAL CONFLICT GREATEST RISK

Senator CHILES. Then the risk that you think is greatest to us now is the risk that we might have to fight a conventional conflict?

Secretary WEINBERGER. Well, I think that is the conventional wisdom, so to speak. I would hope that we would never have to fight a nuclear war, because we do not believe that one can be won, and we do not think that they should ever be fought.

But we cannot assume that the other side thinks that way. That is the problem of deterrence. Deterrence is not a degree of strength that deters us, and it is not what we think will deter the Soviets. It is what we have to estimate they will think discourages them. And that makes it a very risky equation and an equation in which the margin of error is extraordinarily small.

Senator CHILES. Would you say that our operational plans and our funding allocations reflect concern that it would probably be a conventional conflict?

Secretary WEINBERGER. Yes, yes. Less than 15 percent of our budget is for strategic weapons. That has been true. It is true now, with the buildup and regaining the strength in the triad. And it will be true all through the period, up through the end of the decade, if the President's plans are carried out.

TOTAL STRATEGIC INVESTMENT

Senator CHILES. What about the projected growth that is in the budget now? Is that still going to maintain at less than 15 percent, with the projected growth in strategic?

Secretary WEINBERGER. Yes. The total strategic investment for each year through the end of the decade will never be above 15, actually never above 14 percent.

General VESSEY. I would say to you, Senator, that, if you want to make sure that you do not fight a strategic nuclear war, you do not want to let your strategic nuclear programs drop down below that. Reducing money in strategic nuclear programs does not reduce the probability of strategic nuclear war.

Senator CHILES. I am sure at some level that that is correct. I do not know where that level is, but I am sure that certainly would be correct.

Secretary WEINBERGER. The real dilemma on the strategic thing, Senator, is that we have to modernize and strengthen all three parts of the triad at once. We have to do the ICBM's, the bombers and the submarines, and the submarine missiles.

WEAPON SYSTEMS OUTYEAR COSTS

Chairman DOMENICI. As I understand it, we are going to try a second round here. I have not had any questions. I am going to try 5 minutes if you will turn the timer on. Then we will proceed with the same roster.

There are three things, Mr. Secretary, that I think bother the general public, and consequently the Congress. We would like very much to get your views on it. Because of historic reports such as Mr. Franklin C. Spinney's, there is a gnawing kind of concern that the weapon systems we are authorizing are going to cost substantially more than we have authorized in budget authority. Some of those have been coming on for the last couple of years. Some are just coming on.

Could you generally tell us today, as Secretary of Defense, whether you think the outyear costs are more achievable now than they were when you took office?

Second, is it possible for you to give us, for the record, a list of the major systems? With your projections for outyear costs? Where they are not on target, tell us why. Where they are under, tell us why. This will give us a little more confidence in what you have told us. And I am not disputing it here today, but a number of Senators dispute it.

Secretary WEINBERGER. I appreciate the opportunity to do that very much, Senator.

[The following was subsequently supplied for the record:]

The cost, schedule and performance status of our major defense acquisition programs is reported in the selected acquisition reports (SARs) at the end of each calendar quarter. On March 19, 1984, we sent to the Congress SARs on 87 major acquisition programs for the quarter ending December 31, 1984. The December quarter contained 23 programs reported for the first time in accordance with section 139a, title 10, United States Code. The SAR on each of the reported systems contains the projections for the outyears.

DOD's performance to date is shown below in an update of a chart that was originally contained in the CBO's report on SARs—"A Review of the Department of Defense December 31, 1982 Selected Acquisition Reports." Special Study, August 1983. Based on the data reflected in the December 1983 SARs, we have updated the annual rate of program cost growth (excluding economic and quantity changes) for 1983. As can be seen, we are continuing to drive cost growth down. This progress is a credit to the DOD acquisition improvement program. Another indicator on our progress towards improving our acquisition program is the number of unit cost breaches (Nunn-McCurdy) the Department has had since the unit cost provisions were enacted. We experienced 24 breaches during 1982, nine in 1983 and only 2 so far in 1984.

Annual Rates of Program Cost Growth for Selected SAR Weapon Systems (Excluding Economic and Quantity Changes)



SOURCE: CBO report, "A Review of the Department of Defense December 31, 1982 Selected Acquisition Reports," Special Study, August 1983.

Data point for 1983 added by OASD(Comptroller) as reflected in December 31, 1983 SARs.

STARTED SYSTEMS AT OR UNDER PROJECTIONS

Secretary WEINBERGER. Let me just take a couple of systems and give you just a couple of principles that we think were parts of the problem. As far as the confidence factor, yes. With the systems that have started under us and were not so far along that they were virtually uncorrectable, I have a high degree of confidence that they will come in at or under the projection. I would be glad to tell you why and illustrate that with one or two systems. The tank, for example, the M-1 tank was 20 years in development, and nobody can possibly defend that length of time. Obviously, the final cost was far above what was originally projected, not only because of the huge inflation that occurred during that 20-year period but because of the number of design changes and because of the number of ways in which the production of that was allowed just to continue. To a considerable extent, the same was true of the Trident *Ohio*-class submarine.

B-1 BOMBER AHEAD OF SCHEDULE

The B-1 bomber, however, is the example with which I am most personally familiar. When I was running the budget in 1970, we put in the money for the B-1 bomber. It was supposed to be ready in 1977.

Two or three things happened. There were innumerable design changes. There were a number of, I can only describe it as, well, a lack of number of very close managerial conferences as to the development of that plane at the highest levels in the Department. There was not any particular penalty or reason in the contract that prevented that sort of thing, or provisions that prevented it.

In 1977, as you know, the plane was canceled. I think it was a mistake, but it was canceled. We felt it was necessary to revive it. Since that time, we gave the Congress an estimate of \$20.5 billion for the total acquisition cost of the bomber.

I can tell you now that 2 years after that figure was given to the Congress and 2 years after the authorization was made and the year after it was reauthorized, last year, we are well ahead of schedule. We are well under the budget. I have every confidence that we will bring it in under the budget and on time or ahead of time. As a matter of fact, I think we are 4 months ahead of the original schedule that the first plane will be rolled out and flown, the B-1B bomber, in September or October of this year. Two or three things have accounted for that.

One was we got a lot better contract. We got contracts which gave an incentive for early, on-time, and under-budget performance and a penalty for the contrary. We also have frozen the design, and we also have regular meetings every 2 weeks at which I participate, in which the only questions are the ones you mentioned a moment ago: Are you on time and, if not, why; and are you under budget or on budget and, if not, why not. That is the agenda for those meetings. We have been able to turn up a few things that might have threatened the development of them, and so on. So, we do this with major systems.

WHOLE ACQUISITION PROCESS IMPROVED

The other thing is, the other system in which we did it effectively, particularly with the timing, were the cruise missiles and the Pershing II. If we had been late with those, with the feeling in Europe as it was, we would probably have not been in a situation where we could have ever deployed the necessary counter to the Soviet SS-20's. But by those regular meetings, by insisting upon knowing what it was that was possibly going to hold anything up and going right to the heart of that problem every 2 weeks, not letting it go 3 or 4 years, we have been able to improve the whole acquisition process. We are essentially doing that with every major weapon system.

So, yes; I have a high degree of confidence that those costs that you could show historically in the past which overran estimates are not going to do so in significant ways.

Senator GRASSLEY. Would the chairman yield?

Chairman DOMENICI. Let me just make one thought and then I will be pleased to yield.

Because of the nature of this committee's work, Mr. Secretary, one might assume that a significant amount of the questioning is not necessarily relevant to the budget resolution and our function. We cannot help that, as you know. But I think the issue I raised is right on target. I would very much appreciate it if you would within a reasonable amount of time list the systems as we have discussed it, and submit the list to the committee. When it is submitted, we will then open up that particular part of the record for any Senators that want to ask questions about those systems. Then in turn the Secretary and the Department can answer the questions.

Secretary WEINBERGER. We will be very glad to do that, Senator.

Chairman DOMENICI. I think we ought to have that as soon as possible.

I have two more, Senator, but I yield to you.

ORIGINAL B-1 PROGRAM STANDS

Senator GRASSLEY. Just as a matter of clarification, Mr. Secretary, as far as the B-1 is concerned you are saying that we are going to be able to get 100 bombers, not any more, not any less, or the figure that was projected 2 years ago.

Secretary WEINBERGER. That is correct.

Senator GRASSLEY. And that we are on time as far as getting the, I believe it is 52 for \$16.5 billion. And then the remaining 48 will come from the remaining \$4 billion or thereabouts that was projected?

Secretary WEINBERGER. No, that is not correct. We are ahead of time.

Senator GRASSLEY. OK. So, then you might even get it for less.

Secretary WEINBERGER. We will get it ahead of time. At the moment, it looks as if we could conceivably come in for less.

Senator GRASSLEY. You have no plans to request more than 100 bombers?

Secretary WEINBERGER. No, the original program stands. In order to end up with 100 deployed bombers, as we said 2 years ago, you have to have a somewhat larger order. But the deployed planes,

the actual order is exactly as it was 2 years ago. It is under the \$20.5 billion, and it is ahead of time.

TWO-YEAR APPROPRIATION CYCLE

Chairman DOMENICI. Thank you very much, Senator. Mr. Secretary, there are numerous suggestions that we go on at least a 2-year appropriation cycle for the Defense Department's appropriated account. Whether we agree with the Grace Commission or not, obviously a number of their projections are questionable, but they also recommend that. I ask you, do you support a 2-year appropriation process for the appropriated Defense accounts?

Secretary WEINBERGER. Yes, indeed. It would produce major savings. I am not optimistic about its chances, but I would certainly support it.

Chairman DOMENICI. Does the President support it?

Secretary WEINBERGER. Yes.

CONTRACTING FOR SPARE PARTS

Chairman DOMENICI. With reference to the lingering concern of constituents about this business of paying \$900 for a hammer, which you have addressed today, and I commend you for it and compliment you, let me ask you again. It is true that it was the Defense Department that found this shortcoming?

Secretary WEINBERGER. Yes, sir.

Chairman DOMENICI. Is it true that there were a number of contracts that permitted the provider or required the provider be the sole source of spare parts?

Secretary WEINBERGER. Yes.

Chairman DOMENICI. And that they could just name whatever price and we bought it?

Secretary WEINBERGER. Not whatever price, but if we needed spare parts, we had little leverage for negotiating rockbottom prices. And you cannot fly some of these planes or operate some of these systems without spare parts. Yes, that was a large part of the problem.

Chairman DOMENICI. That is like a contractor building a road. He could surely bid awfully low if he was going to have the exclusive right on its repair, and you could not challenge the cost of the repair.

Secretary WEINBERGER. That is the problem. And now, on the new contract, for the fighter engine that was awarded last week, you will see that that is not only not the case, but that we acquire a lot of spares at the beginning with the engine and that the rights to the spares are specifically not held. And the engine is to be designed in a way that encourages competition among the suppliers of spare parts. We are free to go anywhere we want and get the very best price for spare parts. And that is the way contracts should be drawn.

Chairman DOMENICI. I understand that, if this here was a spare part, one block of wood, the procurement officers were not ordering a block of wood; they were ordering spare part X-32-56?

Secretary WEINBERGER. That has happened, yes, sir.

Chairman DOMENICI. What has happened to change that? It seems to me, if a procurement officer would see a hammer and \$900, he would question it. And if he sees a bunch of numbers, he does not.

Secretary WEINBERGER. We have adopted the motto, ask for it by name. So, it is essential now that names be used.

Another footnote of this, Mr. Chairman, is the fact that in some cases the Air Force, very successfully, has been manufacturing their own small spare parts in their very excellent repair facilities. This has saved us a considerable amount of money. It runs into a little ideology that you and I do not much like Government manufacture when we can go to the private sector. But I am not going to let ideology stand in the way if we can save a lot of money, and that is exactly what we are doing.

Chairman DOMENICI. Let me assure you that ideology should not stand in the way of a \$900 hammer versus a \$1.50. Pretty soon they will learn how to bid it for a \$1.40 if you make it.

Secretary WEINBERGER. That is exactly what we think.

Chairman DOMENICI. That is our ideology, not give them the \$900.

Secretary WEINBERGER. And that is what is going to happen with the new aircraft engine, which is a very large contract.

Chairman DOMENICI. I was going to go back for a second round, but two Senators have been waiting and had to leave and came back. I think we should proceed to them, and I am going to. Senator Exon.

COST OF TROOP COMMITMENTS AND OPERATIONS IN HONDURAS

Senator EXON. Mr. Secretary, last week I asked you the question about the cost of our troop commitments and overall operations in Honduras for next year. You did not have it at that time and were to get it for me. Do you have that today or not?

Secretary WEINBERGER. I have asked to have it made available to you, Senator. It is a part of the exercise and maneuver budget. General Vessey may have it in general terms, but I do not have it specifically for that. The maneuver and exercise budget for the whole year includes funds for exercises all over the world. The costs of Honduras are within that budget. We will break it out for you. I think it is probably being assembled by the Department now in response to your earlier question.

Senator EXON. I assume—you were shaking your head, so you do not have it, General Vessey?

General VESSEY. I do not have it at my fingertips.

TROOPS TO REMAIN IN HONDURAS

Senator EXON. Is it true what I understood you to say last week in Armed Services that the basis for estimate is about 700 troops to remain there next year, support personnel?

Secretary WEINBERGER. Well, it was not a specific amount. I estimated that for Armed Services and for the following purposes. There will be other exercises in Honduras if the country continues to invite us, as they have. You can do it two ways. You can leave some heavy equipment in the country for those subsequent exer-

cises later this year or next year. Or you can pick it all up and take it out with you and bring it all back in with you next time. We have chosen the former way because it is less expensive. But that requires the people to be there to take care of it. We also will have some public health functions, some of the medical units that are there as part of the exercise. Some of the facilities and, again, caring for those, operating some of them in the medical field which helps the public health of the nation down there, will remain.

There will be some communications personnel.

But, roughly, the estimate I gave, I think, is about the best I can do at the moment, 700 to 800. But that is an estimate only.

NUMBER OF MANEUVERS PLANNED IN HONDURAS

Senator EXON. Is it fair to assume, as I do, that with this commitment next year that the plan obviously is to have a major military force in Honduras next year and very likely for years to come?

Secretary WEINBERGER. Not on anything except a maneuver or an exercise basis. We do this in Korea. We do it in Egypt as part of the Bright Star exercises. We do it in a number of countries. But it is not to have a major permanent military force. But it is entirely correct to say that our plans envision a number of maneuvers over the years in Honduras because this is a critical part of our defense of the continent.

REASONS FOR NOT REDUCING NUMBER OF MX MISSILES

Senator EXON. Thank you, Mr. Secretary. Let us get on to the budget now.

You have been told both in Armed Services and here this morning that, right or wrong, major reductions are going to have to be made in the size of the military increase that the administration has recommended. Certainly I think that you said in Armed Services—and I still think it is both your position and that of the Chief of Staff—that we just dare not make any significant reductions in readiness. Now, given that, that means that we are going to have to go to some of the procurement items.

Let me ask you a specific question. What would happen if we would reduce the numbers of MX missiles in the procurement budget? Would that have, in your opinion, a serious deterrent to our national security objectives?

Secretary WEINBERGER. It would not be a serious deterrent; it would be the opposite. It would be rather a clear signal, depending upon the amount of the reduction, to the Soviets and to our allies, whom we are pressing to do more, that we ourselves lack the resolve to modernize our one critically important leg of the triad, the one in which we are farthest behind, measured against the Soviets. It would also, perhaps incidentally but something, I think, you would be concerned with, it would add very largely to the total cost of the program we ultimately would have to have.

Senator EXON. Mr. Secretary, what does the budget contain, 50 MX's for next year, how many?

Secretary WEINBERGER. Let me see. I think it is 39.

Senator EXON. Well, if we would reduce that to 20 or 25, would that not still signal the commitment that you are concerned about?

Secretary WEINBERGER. I think it would raise very considerable question because of the length of time that we have had this gap. It would also, as I say, substantially add to the cost.

Senator EXON. Over the full term?

Secretary WEINBERGER. Yes, sir, without any question, because you would run into whatever inflation was happening at that point. You would not have, in any sense, on the schedule that we have.

Twenty-one were authorized and appropriated for in 1984; 40—I said 39—40 for 1985 is the request. If you went down to 20, you would slow the deployment, you would slow the testing, and you would add greatly to the cost. You would also have substantial problems in keeping the deterrent total capability that we need at any given time.

NOT A GOOD IDEA TO KEEP TITANS IN PLACE

Senator EXON. Mr. Secretary, if we should decide to make a reduction and if the Congress eventually acts on that, let us say that we cut the 40 to 20, for the sake of discussion, then, in line with the national security objectives that you outline here, to deter attack, mutual reductions in nuclear forces, and so forth and so on, if we would do that, do you not think it would be a good idea if we maybe put some money in to keep the Titans in place? At the present time we are unilaterally disarming. I think we are now down to '39 Titans. If we decide to not buy the MX procurements you recommend, do you think it would be a good idea for us to keep the Titans in place a little longer?

Secretary WEINBERGER. Actually, I suppose we would have to. But it would not be a very good idea, Senator, because the Titan is certainly a very large missile and there is certainly a considerable deterrent characteristic to an inaccurate missile, but it is not the kind of hard-target kill capability that is required, particularly in view of the Soviet hardening and their ability, because of their accuracy, to pinpoint and destroy our missiles and missile sites. As you know, we have had a couple of small problems with the Titan that have caused a considerable amount of concern in the areas where they have occurred. So, I would—

Senator EXON. That is true, Mr. Secretary, but we also have reports from the Air Force that say that they are still a, quote, "safe," end quote, weapon in the field of nuclear deterrent.

Secretary WEINBERGER. Well, they can be made so. They require very large maintenance costs. They are weapons, as I say, that do not give us the kind of capability we need, the accuracy and the hard-target kill capability that the Soviets have and that we are trying to regain. I would—

Senator EXON. But they are a deterrent?

Secretary WEINBERGER. In the same way that a very wild fast-ball pitcher is a deterrent. He might not—

Senator EXON. There are a lot of very wild fast-ball pitchers that have stayed in the major leagues and made an awful lot of money for a long time.

Secretary WEINBERGER. That is right, by driving some people away from the plate. But, if what they have to do is to get the ball

eventually over the plate, why, then they are not going to serve very much of a deterrent purpose.

We are not talking about destructive, widespread capability of splattering over a huge area. What we need is an ability to destroy a specific Soviet target.

Senator EXON. Mr. Chairman, my time is up. I do want some more time a second round. Thank you.

Chairman DOMENICI. Senator Quayle.

IMPORTANT AREAS OF DEFENSE BUDGET AS A PERCENT

Senator QUAYLE. Thank you, Mr. Chairman. Welcome, Mr. Secretary. As you know, in the Budget Committee we deal in percentages and numbers like 3 percent, 7 percent, rather than specific line items that the Armed Services and Appropriations Committee delve into.

I would like to understand the defense budget. In percentage terms in three areas, take personnel, procurement, and operations and maintenance. I wonder if you can break down for us in percentages about what we are talking about. I think personnel is about 46 percent?

Secretary WEINBERGER. About 42.9 percent this year—

Senator QUAYLE. What would procurement be as a percentage of the budget?

Secretary WEINBERGER. I can get it for you exactly. I think it is somewhere in the neighborhood of about 35 percent, something in that range. Then you have to bear in mind that there are certain overlaps in these things. There are heavy personnel costs involved in operations and maintenance. So, they are not mutually exclusive terms.

Senator QUAYLE. And then roughly about 30 percent, or 29 percent would be in operation and maintenance, right?

Secretary WEINBERGER. Well—

Senator QUAYLE. Those are rough figures. I would like, if you could for us, break them down. I think those are three very important areas.

Secretary WEINBERGER. We can do that, bearing in mind there is some overlap.

Senator QUAYLE. I understand that. Now, given the fact that I doubt if anybody is going to get into the retirement issue; there may be some discussion about delay of COLA. I do not know where we are going to go as far as the pay issue. Procurement is always something to talk about. Under the procurement you have got conventional and strategic. What percent of the budget is strategic procurement?

Secretary WEINBERGER. Total strategic is about 13.5 percent this year.

Senator QUAYLE. About 13.5 percent.

General VESSEY. That is not procurement—

Senator QUAYLE. That is just strategic—

General VESSEY. That is operations and procurement.

Secretary WEINBERGER. Yes.

Senator QUAYLE. OK, how about under procurement, how would that break down as far as conventional and strategic?

Secretary WEINBERGER. I will have to get it for you. It is much more—

IMPORTANT TO UNDERSTAND WHERE CUTS ARE COMING FROM

Senator QUAYLE. I just think that it is very important that we understand where these cuts are going to come from. I would be willing to suggest that they are probably going to come from operation and maintenance, which they usually do, or stretching out the procurement program. Before we get too intoxicated with just cutting defense for the sake of cutting defense, I think, if in fact I am right on those assumptions, what does that mean? If we are going to get in and delay this and get into operation and maintenance, what does this mean for our national defense?

Secretary WEINBERGER. What it really means, Senator, is that the simple solution I have offered you is the best one. And that is not to trouble yourself with this problem.

Senator QUAYLE. I understand that fully, Mr. Secretary, but I think that what we really need to do is talk in general terms. What are we really talking about?

Secretary WEINBERGER. One is the example of what happened last year, in which, after very careful consideration for 10½ months, it went to this committee, the Armed Services Committee and the Appropriations Committee. It was heard in part by the Foreign Relations Committee, in 2 days some 820 items were cut, \$1 million here, \$5 million there, \$22 million here, and so on. And that had a very serious adverse effect on operations, on maintenance, in readiness, and in sustainability. They are all basically rather dull topics without large constituencies to support them and all areas that did interfere with the orderly regaining of our military strength. That is one thing. You can do that. I do not recommend that at all, but that is what happened.

Then the other thing is you can pick out something like the tanks, and you can cut out all tank production. We have sunk about \$9 billion into that now, but you could cut it out. You would save about a billion nine, a billion eight point nine. You would lose about 11,000 jobs. You would then have a tank that you know is inferior to the Soviet's.

You could, if you want, do the thing that Senator Exon suggested and cut back some of the MX missiles. That would make the ones that we knew we will need, that we have to have to regain and keep a strategic equivalence and balance; we have to get them sometime. And that increases the risk while we do not have them, and it adds greatly to the cost of the total program.

I appreciate what you are trying to do. I am sorry there are no easy answers. If I might suggest most respectfully, this is the task that we have done. We went through a very large list of validated needs. We brought it down about \$16.5 billion from those validated needs. The needs are still there. But what is before you has been through this process.

REAL GROWTH ESTIMATES

Senator QUAYLE. I understand, Mr. Secretary.

If in fact what happens is what you described, and which I know you do not want to happen, what about the estimates that you have for the 3 to 4 percent real growth in 1987 and 1989? Will that go up then?

Secretary WEINBERGER. Inevitably.

Senator QUAYLE. Then those budget figures that you have given us in the out-years will really become much higher?

Secretary WEINBERGER. Inevitably, but you will get less for it, Senator, because there will be inflation. No matter how successful we are in holding it down, you will get less for it. And the danger will be there because the period of time in which you closed the gap will remain open.

TWO-YEAR BUDGET

Senator QUAYLE. I was curious about your response to Senator Domenici's question on the 2-year budget. How actively are we pushing this? I am all for it, but I do not see a whole lot of movement, either in the Armed Services Committee or this committee. Beyond stating publicly that we are for it, is there any way that we can try to push that this year?

Secretary WEINBERGER. Yes, I would be delighted to come out and testify for any number of given hours in favor of it, for any bill that is put in. We would urge a bill to be put in. We have not sponsored a bill or put in a bill of that kind ourselves yet.

Senator QUAYLE. You have not submitted it to your budget?

Secretary WEINBERGER. Not as yet, no, sir, but we certainly would be glad to do so. We have had to make some estimates as to where we put our time. It did appear from previous discussions that this was not one of the most profitable areas—

Senator QUAYLE. I would say, as one who supports not just the 2-year budget for defense but a 2-year cycle for the total budget that as soon—maybe this year is too late, but I hope that maybe the planning that you can do for next year in submission of the 1986-87 budget, that you recommend to the Congress specifically to get on with the 2-year budget at least in defense. If we can start in it with defense, people may see the merits of that and expand it to the other areas of Government as well. I think, as far as stability, accountability, and all sorts of things, that we ought to move in that direction.

Secretary WEINBERGER. I would be all for it. The real problem is that we have to be sure that the second Congress did not decide that the first Congress was wrong about anything but let the full 2-year budget stand.

SPARE PARTS PROBLEM

Senator QUAYLE. Mr. Secretary, there has been a lot of discussion and public comment about the spare parts and all the problems that have gone on over there. Is this a new problem that you have uncovered? Is it just a recent situation where we have found that the accounting reports are putting out these deficiencies?

Secretary WEINBERGER. No; I have to believe that it has gone on for many years. It is new in the sense that we found it and we are the ones who have taken the action to do something about it. But I

gather from some of the contracts and from some of the individual situations that we have had found, it has been something that has been going on for far too long.

Senator QUAYLE. So, in other words, these recent revelations of overcharge and ordering by the number is not something that just has gone on in the last year or 2 years? It is something in your opinion that has gone on for many years. The publicity is just something that you have chosen to expose, but this is not any new procurement methodology that you are using that would cause these kinds of problems. Is that correct?

Secretary WEINBERGER. We think that, from the age of some of the contracts involved, that had the provisions that I discussed with the chairman, it has been going on for some time. What we have tried to do is get at it from the point of view of awareness with incentives and the penalties for our own people; through improvement of contracts; and, at the same time, going actively against some of the contractors, or trying to persuade them, where they do not have to, to make refunds. Then also, we are trying to get original contracts in such shape that we do not have this happen by having the design of the system such that it allows competitive acquisition of spare parts.

PUSH NEEDED FOR 2-YEAR BUDGET

Senator QUAYLE. My time is up. I would just reiterate my intense interest in going forward as quickly as possible to that 2-year budget. We really need your lead and help on that. So, I hope that we can do more than just talk about it.

Secretary WEINBERGER. Oh, we are.

Senator QUAYLE. I really do think that it is something that we ought to push quite seriously. Thank you, Mr. Chairman.

Chairman DOMENICI. Actually, Senator, not only do I agree with that last observation on your part, but some people think you have to amend the budget act to have a 2-year appropriation; I am not sure you do.

Senator QUAYLE. I do not think you do, either. As a matter of fact, that is why I think it is instructive that we take the leadership from the Secretary of Defense to start to push this, whether it is in the Budget Committee or the Armed Services Committee. It may not happen. But, you know, a lot of things that do not happen in one year happen in the following year or later on. I think it is so important from a managerial point of view and to give you a better handle on the management of these procurement contracts that you want to deal with that this is the best way to go. I know that the chairman of the Budget Committee is supporting that. And he is a very important dominating figure around here.

Secretary WEINBERGER. Absolutely.

Chairman DOMENICI. What kind of figure?

Senator QUAYLE. You tend to dominate, sometimes.

Secretary WEINBERGER. Just the Army savings alone from that—and it is all the benefits of multiyear procurement simply blown up large, is what it is—are in the high billions. I think it is something like \$6 or \$7 billion for a 2-year budget.

Chairman DOMENICI. Senator Riegle.

NUMBER OF NUCLEAR WARHEADS

Senator RIEGLE. Thank you, Mr. Chairman.

What now is your estimate, Mr. Secretary, of the number of nuclear warheads that we have operational?

Secretary WEINBERGER. I have an estimate, Senator. As I suspected this morning when I was talking to you, it is classified and I will put it in a classified response.

Senator RIEGLE. There is unclassified data as to the number of warheads we have. Let us leave the operational aside. How many nuclear warheads—

Secretary WEINBERGER. I do not have any unclassified data, but I can get for you what is classified and what is the fact, and we will get it to you. Again, let me reiterate that the count of raw warheads is quite irrelevant.

Senator RIEGLE. You made that point earlier.

Secretary WEINBERGER. Yes, but I want to make it again because I want to be sure that it is in the record both times. You have to talk about the age and the accuracy of the launchers, the effectiveness, the destructive power of the system—all of that. So, considering raw warheads is basically an irrelevant consideration.

Senator RIEGLE. Mr. Secretary, I would still like to have three pieces of data that I would have assumed that you would have and perhaps have with you. Maybe General Vessey has it if you do not have it. And that is the question of how many nuclear warheads we presently have in our stockpile, leaving aside the operational question. That number has been published any number of times. In fact, it is published by the Defense Department. I have got a copy of an article in U.S. News & World Report that reports the numbers. So, I assume you have the number.

PROPOSED NUMBER OF ADDITIONAL NUCLEAR WARHEADS

But I also then want to establish how many additional warheads you propose to build in the next 5 years. This is an important question. It is a question that I want as a member of this committee. The Senate deserves to have it. The public has a right to have it. And just sidestepping the question is not a straight answer, so—

Secretary WEINBERGER. I am not sidestepping it, Senator.

Senator RIEGLE. What is the number that you propose to add over the next 5 years in terms of nuclear warheads? It is in excess of 5,000, is it not?

Secretary WEINBERGER. Others can break the confidential and restricted classified rules if they wish to do so; I am certainly not going to. I will get you the data in classified form and hope that the classification and the restrictions will be maintained.

Senator RIEGLE. Well, there is a very large body of this information that is declassified and is available. You may not wish to speak about it today, and I think you have made that clear.

Secretary WEINBERGER. No, I think that your implications are totally wrong. If you wish to continue in a demagogic fashion to insist on saying something that I have not said, that is, of course, your privilege, which you have exercised in the past. But the simple fact of the matter is that the data you ask for is restricted and classified. I will get it to you in that form. I am not dodging it.

And I do not wish not to discuss it. It is just that a few of us have to maintain the sanctity of the classification system, or we will add greatly to the strength of our opponent.

Senator RIEGLE. I just want to make it equally clear for the record that the number of additional nuclear warheads that you propose to have this country build, which is a figure in excess of 5,000 out over the next 5 years, according to the submissions that you have made, and that data, I think, is available. I think it is something that you should present. And the cost of it should be presented.

I think to sidestep it, which I think is being done here is not appropriate. You have made your editorial comment; that is mine. I think it does not even serve your own purpose.

FINANCIAL IMPLICATION OF BUDGET REQUEST

I want to move to the financial implication of the budget request that you are making. The President is asking for another \$180 billion deficit this year in his budget, as you know. Over the next 5 years, you are asking to spend on national defense an addition close to \$2 trillion on top of the defense buildup that we already have seen and are struggling to pay for now. Dr. Feldstein, when he was here yesterday, or Friday, our last hearing day, said that, if we were to get a recession in 1985, which many economists are predicting, the deficits could easily go above \$300 billion a year, which is substantially above where they are now.

JAPAN NOT PAYING SHARE OF FREE WORLD'S DEFENSE BILL

I want to ask you as a follow-on to a question that came from the other side of the aisle this. How long can we continue to pay Japan's share of the free world's defense bill, which is what we are doing now? You are in here asking again to do it this year, as you have in all the previous years. They are not carrying their share of the load. You admitted that the West Germans have cut back on their commitment. We are outspending in percentage terms and, of course, in real terms by a very substantial margin all of the other allies of any consequence. Japan, of course, I think is the most extreme case.

The money they are not spending on the free world defense, they are recycling into their industrial base. We have a trade deficit with them now of in excess of \$15 billion. It is hurting this country.

I am just wondering how long are you going to tolerate this? I mean, how can you come in and ask us to continue to pick up their share of the free world defense bill as well as our own?

Secretary WEINBERGER. Just as long as the defense of Japan is part of the defense of the United States. We are not over there for any altruistic purpose. We are over there because it helps ourselves. And we are over there to prevent any kind of attacks upon continental United States or anything that would in any way weaken us. And as long as it is necessary to do that to protect the United States, I would make the request; and I would hope that there would be some who would be responsible enough to see that we can best defend the United States, not from within a continental fortress that cannot possibly survive, but by a forward defense

that involves the active cooperation and support of our allies. As one who has had some small experience in working with the allies now for the past few years, I know that there are a couple of ways that you can go about this. One of them is to call a press conference or bang on the table and shout a lot of importations and a lot of demagoguery about how poorly they are doing and assume that that will immediately bring up their defense investment. The other is to work quietly with them and to get increases that are beneficial and to get things that do not even show up in their budget, such as the \$1.1 billion a year that they are paying for the support of a lot of the American facilities in Japan, which helps their defense and which helps ours.

This is not an altruistic business, Senator. This is a means of protecting the United States. And, if we want to go back to the old isolationism that brought us very perilously close to a disaster in World War II, that will be your responsibility; but I do not want to recommend it.

Senator RIEGLE. The question is when are they going to start paying their fair share? And it sounds to me—I mean, you gave a long answer, but the cold fact of the matter is they are not paying their fair share. And it does not appear to me that you have any intention to see that that changes anytime soon.

Secretary WEINBERGER. Well, of course, my influence in the Diet is somewhat restricted, but I will certainly make every effort, as we have in the past, to bring home to them, which they know very well, the importance of increasing their expenditures for their own security, which in turn helps our security. We can, as I say, continue to try to do this in a very loud, noisy way, or we can try and do it in an effective way.

You have to bear in mind that all through the seventies we did not do anything remotely resembling our share. We went down 20 percent in real terms in that whole decade. They are aware of that, and they remember it. I hear that when I make these arguments in NATO and when I make them in other parts of the world.

TRADE DEFICIT DOING TERRIFIC DAMAGE

Senator RIEGLE. You are aware of the fact that last year we had a \$70 billion trade deficit, and the best estimates are that the trade deficit this year will go to \$100 billion. It is unprecedented. And it is doing terrific damage because millions of jobs are leaving the country as a result of it. And Japan, that now has in excess of a \$15 billion trade surplus with us, is not using some of that money to pay this joint defense bill. In fact, we end up having to pay for both our share and their share, and at the same time they are moving in on us on the trade front, taking the jobs from this country. How long do you think this can go on? The concern that I have is that I do not see any real analysis here of the economic effect of your defense request. And that is why you keep running into trouble up here. You did last year. And I think you will continue to again because we are out beyond our financial capacity right now. And one of the ways to deal with the problem would be to get the allies to do a better job of picking up their fair share of the defense cost.

Secretary WEINBERGER. That, again, requires that we go over and tell their governments exactly what they should do and stand by with a large horse whip until they do it.

ECONOMIC EFFECT OF DEFENSE BUDGET

As far as the economic effect of the budget, I have made that point as clear as I could. One of the things that we can cancel is the M-1 tank, and we will save some billion dollars there; and we will lose 11,000 jobs. I would be interested to know your recommendations on that.

Senator RIEGLE. I would be happy to give you a number. That is not the only system that we can look at. There is certainly the MX and a lot of others. In fact some leading economists yesterday on television were expressing the view that, in any enormous function such as the Defense Department is today, to squeeze out 2 or 3 percent of the cost of the overall budget is something that is done in all the major corporations of this country when there is a financial squeeze. And it seems that the defense area is the one area where we are incapable of doing that. It is disappointing. I think many of your best friends in the Congress are disappointed. That is why they are not approving the request you asked for.

Secretary WEINBERGER. The process has already taken place, Senator. We have done that squeezing process. Now the question is whether you want to injure the national security by irresponsible actions of the kind that have been discussed.

Chairman DOMENICI. The Senator's time has expired.

TRYING TO MAKE WARRANTIES WORK

Senator ANDREWS. Thank you, Mr. Chairman. Mr. Secretary, I appreciated your agreeing when we were talking about warranty, it seems an hour or more ago, that it was a good feature of the engine procurement. And it would have prevented that C-5 mess that came about before your tenure as Secretary of Defense. Mr. Secretary, does that mean that your submission on page G-72 and G-73 of the budget proposal, where you plan to eliminate, repeal the warranty requirement is now not quite so solidly supported by the Department of Defense?

Secretary WEINBERGER. I do not know what particular piece of paper you have before you, Senator. I——

Senator ANDREWS. Well, I have two pages from the budget, which is what we are testifying on today.

Secretary WEINBERGER. I think it is the rigidity we are talking about. There are many situations, as I mentioned this morning, in which the automatic requirement that we add to the cost of whatever system it is in order to get a warranty may not be cost effective. It can be in many cases, and we certainly want to do it wherever we can. We will have before you very shortly the regulations that will carry out the warranty provision.

Senator ANDREWS. In other words——

Secretary WEINBERGER. We will not ask for another waiver of the application of those, as we did to get our regulations ready.

Senator ANDREWS. What you are telling me now then, Mr. Secretary, is that you are trying to find ways of making this warranty work rather than to just flat out repeal it.

Secretary WEINBERGER. Of course, of course.

Senator ANDREWS. That is fine, and we will cooperate with you in any way we possibly can. That is new, and that is refreshing because your Assistant Secretary came up and had a talking paper on warranties on January 30 with the staff of the Budget Committee. She pointed out all of the problems, no funds provided in the budget for increased acquisition costs, adverse effect on readiness and support, and a whole lot of ideas, we think, Mr. Secretary—maybe we are naive, but we think that weapon systems that work actually do more to protect our freedom than buying weapon systems that do not work. And we hope that we can get together to get a warranty system that will make these weapon systems work. And we appreciate your support.

Secretary WEINBERGER. Nobody is ever going to argue with that. It is sort of like title insurance. You pay quite a lot for it. And if you find when you read it that there are 82 exceptions and the only thing you have insured against is the title company being willing to issue a piece of paper, it is not very worthwhile. So, we want to see what we are getting. We want to be as flexible as we can. But we all have, Senator, exactly the same goal.

ONLY 8 OF 14 CARRIERS READY TO BE DEPLOYED

Senator ANDREWS. I know. And the old Cap is coming through because I think you feel just as most of us feel that, if we can buy weapon systems that work for \$11 million, it is a whale of a lot better than buying one that does not work for \$10 million.

To get on to another subject, because my time is limited, you mentioned a minute ago that we are talking today of a snatshot of time, 11:30, 12 o'clock, 12:30 this a.m., what is happening defense-wise. Our fleet is off Beirut. That fleet is probably in a position where, if it is not under attack, it could well be under attack. One of the things that bother us in the overview of this budget look is the fact that we understand—and this is not classified—that of our 14 carriers, only 8 are ready to be deployed; 6 are not. Is this cost effectiveness? Should we not be spending more money on readiness and less money on procurement of these new big items? Why do we need to buy two new carriers, for instance, if we have got six in inventory now that cannot steam out in defense of our freedom?

Secretary WEINBERGER. No; it is not that they cannot steam out in defense of freedom, Senator. It is that there is a regularly scheduled overhaul, things that do ship's life extension. And you are talking about peacetime conditions also. If we were at war, we would, of course, make all the adjustments necessary and not proceed with all of the types of lengthy overhaul or ship life extension or anything else. We would make do immediately. But when we have the opportunity, it is much better to take the time necessary to have them in tip-top shape.

Senator ANDREWS. But is not the 40-percent nonreadiness excessive?

Secretary WEINBERGER. That is not the figure, sir. We would have available for use a far higher percentage of that at any given time.

Senator ANDREWS. The figure that we had is that only eight carriers are ready to go within 2 to 3 months. Is not that essentially the figure, General?

General VESSEY. That is with the present peacetime planning—

SHIPS OPERATING IN PEACETIME ENVIRONMENT

Senator ANDREWS. Added to that was the appalling story that we all read in the newspaper or saw on television about our carrier off Beirut. We heard that there was a possibility of kamikaze attacks, suicide attacks on it. We then read in the paper that the Defense Department was sending out to that carrier the weapons that could put off that kind, or stand off that type of attack.

The question I think most Americans have in their mind was why in the devil was not that weapon system on that carrier before we deployed it into the eastern Mediterranean?

General VESSEY. I think I can explain that fairly—

Chairman DOMENICI. General, would you just yield to me for a moment before you do that?

I have to leave, Senator, but they have to leave at 12:45. So, I would appreciate your chairing. Since a number of Senators want a few more questions, be as judicious as you can in allotting time. Thank you.

Secretary WEINBERGER. Thank you, Mr. Chairman.

General VESSEY. The situation of the carriers and the other ships that are out there is a peacetime situation, Senator, and the airways are full of all sorts of civilian airplanes. We are not going to shoot those down in peacetime unless they make some overt attack on the carrier or on the ship. So, it means that you have got to operate in the peacetime environment and at the same time be prepared for that sort of kamikaze attack that would not threaten you in wartime. And that is why those extra short-range missiles went out there.

PUBLIC APPALLED AT LAST MINUTE PREPARATION

Senator ANDREWS. General, the problem with the American public, they are as conscientious in recognizing the need to the protect our freedom as anybody who has ever served in the Defense Department. And they are appalled at the fact that, when we get down to this kind of problem, we seem to have to scratch and try to play catchup. The question they are asking me when I am home, and I imagine my colleagues on this committee and other committees is, why do we do this in the last minute? Why, when we deploy a ship to a forward position aren't they ready to go? We also hear talk that—

General VESSEY. They are ready to go, Senator, for the purpose for which the ship was built. What we do not expect to have is to let Cessnas that might be carrying kamikaze pilots and some crazy warhead come in and do that. So, we have to be prepared for all that.

Senator ANDREWS. But, given the experience in our Embassy and our experience with the Marine compound, would not we have imagined that that might happen to a \$2-plus billion ship?

Secretary WEINBERGER. It is exactly why it is now equipped with it, Senator, because we did adjust to the threat as the threat changed.

Senator ANDREWS. We are extremely happy that we are playing catchup now. We hope that we can do a better job of it down the line. Senator CHILES.

GRACE COMMISSION INDICATES \$93 BILLION COULD BE SAVED

Senator CHILES. Thank you, sir. Mr. Secretary, the Grace Commission has indicated that about \$93 billion could be saved, I think, from the defense budget. At this time, what portion of that \$93 billion are you recommending to the President for either administrative decisions or inclusions as to administration request?

Secretary WEINBERGER. We agree with about 70 percent of the Grace Commission recommendations. We are doing a very large percent of that 70 percent. Eighty percent of the Grace Commission recommendations by the volume of dollars they have talked about requires legislation. And we have recommended a number of things in the past and continue to do so at the present time that could save us some money. But generally we think the Grace Commission did a good job. We have some disputes with them, as does the Congressional Budget Office and others, as to the total amount of savings that would be realized.

In a number of situations—and this is one of the ones we are not agreeing with—you require a very large front-end investment. For example, they said we could save \$1.5 to \$2 billion if we had much more modern, up-to-date, automatic data processing and computer equipment. But what does not appear in that recommendation is the fact that it would cost us close to \$1 billion to get it now, and we would not get that savings until the midnineties.

But we do agree generally with a large part of them. We have recommended and are putting in effect, as a matter of fact, many of the things such as multiyear procurement and most economic rate of procurement, which are some of their biggest recommendations, we have had in effect for a couple of years. And we agree with those. Those are good ways to save money.

TOTAL SAVINGS THIS YEAR

Senator CHILES. Could you give me any figure, if you are putting into effect so many of their recommendations, what portion of this \$93 billion we save this year? Do you have any figure on that?

Secretary WEINBERGER. We do have problems with the estimates as to the total amounts of savings. I will get you the data that we are able to supply with respect to the recommendations we are putting into effect and the amounts of savings we think will be realized from that.

Senator CHILES. Of course, some of their big-ticket items have to do with, as you said, legislative changes.

Secretary WEINBERGER. Eighty percent.

Senator CHILES. Eighty percent require legislative changes. Well, of course, important to whether these changes come about is going to be whether the President recommends them or not. What percentage of those are you recommending to the President or is he going to recommend?

Secretary WEINBERGER. I do not have the precise percentage, but a large number of them. And the procedure that is being followed, Senator, is that the recommendations are all being examined by a Government-wide group based at the White House. There will be a consolidated set of recommendations and consolidated response to the report, both the things that can be done administratively and the very large bulk that require statutory change.

Senator CHILES. But you cannot give me any figure today, any number today, even a ball park figure of what we can expect to be saved this year out of administrative changes?

Secretary WEINBERGER. I can try to isolate something from it. As I say, 70 percent of the recommendations of the Grace Commission in general are things that we agree with. A large fraction of that are things we are doing this year and have done for a couple of years. They are all reflected in the net totals that are in the budget before you. But I can try and break that out for you.

If the question is, How much can we save this year by the Grace Commission, that would assume and require the passage of a lot of legislation. I think that very little of it would actually take effect this year. But the value of the Grace Commission is the number of detailed recommendations and the directions for the future that it can point.

I do not think that there would be immediate savings this year unless there is kind of a revolution which allowed a great many things to be passed which have always been defeated before.

Senator CHILES. I think it would be important for us for the record to see what that 70 percent is——

Secretary WEINBERG. All right.

Senator CHILES [continuing]. Which you say you have already incorporated in this budget. I would like to see how much you have already been able to save as a result of those recommendations.

Secretary WEINBERGER. All right, sir.

Senator CHILES. Thank you.

[The following was subsequently supplied for the record:]

The DOD savings in the FY 1985 budget related to Grace Commission recommendations are the result of numerous ongoing DOD actions and management initiatives. Final detail on these savings data are under review in DOD and will be reflected in the DOD Economies and Efficiencies Report, and in related material on the Grace Commission, to be released after further executive branch review. At that time a detailed response will be provided.

Senator ANDREWS. Senator Grassley.

CATCH UP WITH SOVIETS

Senator GRASSLEY. Thank you, Mr. Chairman. Secretary Weinberger, I would like to refer to chart No. 1 of your presentation.¹ That is a comparison of what the Russians purchased with their procurement dollars versus some things that we are going to pro-

¹ See p. 31.

cure with ours. The historical perspective of this \$48 billion increase that is being asked this year, in light of the fact that we have had unprecedented real growth over the last 4 years in the defense budget, and last year we reached in constant dollars the level of the peak year of the Vietnam war. So, I have to look at what we are getting with this increase. It looks like we are getting 720 tanks per year—that is 2 per day—4 surface war ships, 4 attack submarines; and for the U.S. Air Force, less than 200 tactical fighters, and that would be less than 1 per day.

The output does not appear to be anywhere proportional to the input. My question to you, as it relates to the chart is this. How can we catch up with the Soviets, given the way that we are currently doing business, as evidenced by what we are getting for our money?

REGAIN EFFECTIVE EQUIPMENT

Secretary WEINBERGER. If the intention, Senator, was indeed to catch up, if that were the intention, in numbers, we would have to ask you for a very great deal more than \$305 billion authorization. As I mentioned, almost half of that goes for personnel costs, before you get into the acquisition of a single aircraft, submarine, attack submarine, or anything else. But the intention is not to catch up in the sense of a tank for a tank or a plane for a plane. They are ahead in a lot of those areas. The intention is to regain enough modernized, highly technologically effective equipment, which we are acquiring, that will give us not a superiority or not even an evenness, but a degree of deterrent capability that we think can continue to maintain the peace.

We try all of the time to work for arms reduction that will let us get this level much lower down, this level of deterrence. But the chart that you referred to is a statement of the problem. The Soviets do not have the kind of constraints we do with respect to public opinion or worries about their personnel or the kind of quality of life they want for their people generally. That is the difference between the systems. And that enables them to buy these enormous quantities and to secure these enormous quantities of conventional and strategic military weaponry and strength.

What you see before you is a correct statement of the difference between their average annual rate of production for over 10 years and our requests this year, which many say are too high and will have to be cut. But it is not catching up at all. It is regaining enough strength that we hope will be sufficient for deterrence.

Senator GRASSLEY. How much higher would you like those hard numbers to be in relationship to theirs?

Secretary WEINBERGER. I would like theirs to be a lot lower. I would like ours to be high enough to do what we have to do and do it in time. And I think the \$305 billion is the minimum amount necessary to do that. And I understand all the political realities and everybody looking at percentages and worried about other programs and all the rest. But, if you ask me, and the President has asked me to carry out these responsibilities, then I have to tell you what I honestly feel is essential. And what is before you is what we

think is essential to regain a deterrent strength, not to give us superiority or not even, as you point out, to catch up.

MISMATCH BETWEEN OUTPUT AND INPUT

Senator GRASSLEY. I will just close by saying that I think that there is a mismatch between output and input. That is the point that I would like to make. I hope that, as far as quantity and quality are concerned, that there is every effort to see that we are getting more for our money.

Secretary WEINBERGER. There is.

Senator ANDREWS. Senator EXON.

ISRAELIS REQUEST MORE AMERICAN MILITARY ACTION IN BEIRUT

Senator EXON. General Vessey, the Israelis are requesting that we step up our military action in the area of Beirut. What do you know about that?

General VESSEY. I saw that in the newspaper. I have not received any request from the Israelis.

Senator EXON. Do you know anything about that, Mr. Secretary?

Secretary WEINBERGER. No, sir, just what was in the paper this morning.

Senator EXON. Is there any truth to it, from your knowledge?

Secretary WEINBERGER. I have not received any official request. I do not know any other branches of the Government whether they have or not.

Senator EXON. Has it been discussed, the possibility of us stepping up our military action in that area inside of the Department of Defense?

Secretary WEINBERGER. We have discussed the necessity of protecting the forces that are there and the necessity of trying to insure the kind of conditions that can bring about stability as opposed to allowing the whole area to blow up. But these have not involved increased military activities of the kind that were reported this morning in the paper.

EFFECT OF EQUIPPING AND TRAINING LEBANESE ARMY

Senator EXON. Last week in the Armed Services Committee, Mr. Secretary, you told me in response to questions that we were very pleased with the training process that was now going on by our Army officials, as I understood it, and that by April you felt that this training would come to fruition and would have a marked effect on the ability of the Gemayel army forces to do a better job.

Secretary WEINBERGER. Oh, you meant the effect and equipping and training the Lebanese Armed Forces?

Senator EXON. Yes.

Secretary WEINBERGER. I am sorry, I thought—yes, we are spending a very great deal of effort and resources to reequip and train the Lebanese Armed Forces. General Vessey is thoroughly familiar with this program. We would hope that, if conditions are such that they can continue with this, that we would be able to have a number of additional Lebanese brigades on line in a way that could

take over the defense and security of their own country. That is the goal.

Senator EXON. General.

General VESSEY. I would echo that. Certainly, great progress is being made. At the same time, we need to understand that there are a lot of people trying to disrupt Lebanon, particularly the Syrians, right now and to engage that army in combat at the moment, not only engaging the Lebanese Army in combat but urging factional leaders to take political actions that would try and tear the army apart. So, it is a very difficult situation.

Senator EXON. Then we should not put too much strength in an April date?

General VESSEY. Well, the training will go ahead. The information we gave you the other day—as I recall, I think I said that the Lebanese Army has about four brigades that are combat ready now and a few more will be ready in the next couple of months.

LEBANESE ARMY LOYAL TO GEMAYEL GOVERNMENT

Senator EXON. There is some indication, General, that a substantial part of the Gemayel forces may be refusing to go into combat against their own kind. The troops that we are now training there, have they been screened from the standpoint of whether or not they are loyal to the government that we are backing?

General VESSEY. That is the business of the Lebanese Government, Senator. We have not done any sort of screening like that. But I would say to you that information that we have is that the army, from all factional elements, has been extraordinarily loyal to the Government. They have had some defections. Certainly, the point about not wanting to go into combat against their own citizens is certainly an understandable thing, I think, that faces any army.

Senator EXON. General, I assume that you will not want to elaborate on this, but I would just like to establish it for the record.

Should there be mass defections from the Gemayel government's army, I fear that that would further imperil the questionable security of our force now on the ground in Lebanon. Should that happen, I presume that we have a backup plan that would allow us to remove those troops quickly if they would be threatened because of the failure of the Gemayel forces?

General VESSEY. We have contingency plans to take care of the safety of our own forces, Senator.

Senator EXON. Thank you. No further questions, Mr. Chairman.

Senator ANDREWS. I realize, Mr. Secretary, your time is limited; but, as they say in the military, what we see in the skies now are a couple of friendlies. Senator Symms.

MILITARY PENSION SYSTEM

Senator SYMMS. Thank you, Mr. Chairman. Mr. Secretary, you made a good presentation this morning, and General Vessey. What it comes down to from your perspective, if we are talking about savings of any large amounts of money, you are either going to stretch out procurement or decrease our readiness or forgo modernization, all choices that none of us that are concerned about the na-

tional security want. Do you at the same time have any ongoing studies with respect to this 43 percent of the budget which is personnel costs?

Another question just for my edification is this. Does the military pension system, is that charged against the defense budget in 050?

General VESSEY. Yes.

Senator SYMMS. How much is that?

General VESSEY. It is about 5 percent of the budget.

Senator SYMMS. Do you think there is any—

General VESSEY. It is \$17.6 billion—

Secretary WEINBERGER. It is \$17.6 billion.

Senator SYMMS. It is \$17.6 billion of our current defense budget that is actually pensions?

Secretary WEINBERGER. Yes.

Senator SYMMS. Is there any way with respect to the morale factor or for future benefits that you have anything in the works to make the pension system less generous so that it would not cost so much?

COMPENSATION AND RETIREMENT IMPORTANT FACTORS

Secretary WEINBERGER. We have, Senator, a quadrennial review of the military compensation. That Commission has finished its work. Their report and recommendations are circulating through the services and the Department. We will have some formal recommendations based on their work shortly.

I would say, however, that compensation and retirement both are, I think, important factors in the success, and it is an unbounded success at the moment, of the All-Volunteer Armed Forces program. We have literally waiting lists now for all of the services. We cannot take anybody more for particular services. We are able to be selective about the ones we select and the ones we do not take. The educational qualifications are much higher. And the retention rates, both among the enlisted as well as the company and field grade officers is very great.

So, that is a great success. It has eliminated all discussion really of the need for the draft. And the things that the draft did to the country a few years ago, I think, are very vividly remembered. None of us want to go back to that.

An important part of that is the fact that the Congress has very generously authorized and approved increases which we have requested in the compensation and in the various benefits and in the retirement. But the retirement is a critical part of it.

AMOUNT OF DEFENSE BUDGET SPENT ON PERSONNEL

Senator SYMMS. With respect to that, we spend 43 to 50 percent of our military defense budget on personnel. The Russians spend what?

Secretary WEINBERGER. Six to eleven percent this year.

Senator SYMMS. Eleven percent?

Secretary WEINBERGER. Yes.

Senator SYMMS. So, that is part of the answer to the question that Senator Grassley, I think, was asking about, why they—

Secretary WEINBERGER. It is, but then you have to ask could we get the kind of force we have and would we want to treat our people the way Soviet soldiers are treated, with an 11 percent portion of their budget going for their compensation?

One of our great advantages—we talk about the advantages the Soviets have—we have the quality and character and ability of our people. That is something that is not lightly to be put aside.

I would hesitate a long time before tampering with the retirement system in a way that would cause turbulence within the ranks. General Vessey's whole career has been spent with this, and he knows much more about it than I do. I think he should mention this point, too.

General VESSEY. I would just simply say to you, Senator, that, if you want to run the production of military hardware for us up to what the Russians are producing, you will drive that percentage of the defense budget that goes into personnel costs down very far. Just run your fighter production up three times what it is, your tank production up three times what it is, the ship production up three or four times what it is, and that percentage will go down to a very respectable figure.

CARTER/REAGAN ACTUAL OUTLAYS

Senator SYMMS. In the general sense of the amount of money we are spending—and there is a lot said about it and the press is full of articles about how much money we are spending on defense. But after the Soviets marched into Afghanistan and started gassing the civilians and so forth, when President Carter made his last budget request, how far off in actual outlays are we now from what President Carter's budget requests were?

Secretary WEINBERGER. We requested at the beginning in nineteen—

Senator SYMMS. For fiscal year 1985 did he have a request?

Secretary WEINBERGER. We went out through 1986, I believe. We requested an addition when we came in 1981 of \$116 billion in spending to those requests. Through the success we have had with inflation, through our own reductions, through cuts the Congress has made, about \$105 billion of that, \$116 has been removed. We still have been able to get a very substantial amount of increased defense because we have had so much better results with inflation. But the fact remains that a very large part of the requests that we made have been reduced.

Senator SYMMS. The point I am making is this. Did not the request of the former President, Carter, were not those very close to what President Reagan has actually requested? There is not that much difference in actual outlays.

Secretary WEINBERGER. In actual, yes. In dollars that Carter recommended in 1985, he recommended in outlays \$261, the President recommending this year in outlays \$264. But, again, you have to look at the enormous drop in inflation since that time and realize that the Carter budget did not fund in any kind of adequate amount the weapon systems they were asking. And because inflation has been reduced so drastically, we are now able to get a great deal more for these amounts.

Senator SYMMS. So, we are getting more defense for the amount of money?

Secretary WEINBERGER. Yes. We are getting more. We are still being cut back much closer than we would like to some of those what we feel were inadequate figures.

Senator SYMMS. Thank you.

Senator ANDREWS. Senator Quayle, one quick question.

Senator QUAYLE. I know you have to go. I will just take 15 seconds.

Can we get a further breakdown of these numbers on inflation factors and all the numbers on whether it would be a 5 percent or 4 percent?

Secretary WEINBERGER. On the chart you have, inflation estimates—

Senator QUAYLE. The comptroller. That is all right. I want a breakdown. I know you have got to go. Thank you.

[The following was subsequently supplied for the record:]

INFLATION RATES IN FISCAL YEAR 1985 BUDGET

The following table provides the inflation rates used in developing the FY 1985 budget:

	<i>Percent</i>
Pay:	
Military	5.5
Civilian	3.5
Purchases:	
Major systems	6.4
Fuel	0.5
Other purchases	4.9
Composite DOD	4.7

Senator ANDREWS. Mr. Secretary and General Vessey, we appreciate so much your understanding and staying far beyond the bounds of the time.

Secretary WEINBERGER. Thank you.

Senator ANDREWS. We stand in recess, subject to the call of the Chair.

[Whereupon, at 12:55 p.m., the committee was recessed.]



NATIONAL CAPITAL OFFICE

NON COMMISSIONED OFFICERS ASSOCIATION of the UNITED STATES OF AMERICA

STRENGTH IN UNITY

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March 20, 1984

Honorable Pete V. Domenici, Chairman
Committee on the Budget
SD 620, Dirksen Building
Washington, D.C. 20510

Dear Mr. Chairman:

Since your distinguished committee is unable to accommodate the request of this Association to have its representative appear in person to offer oral testimony in behalf of the FY 1985 Defense Budget request, I ask that the attached statement be placed in the record.

Hopefully, members of the committee will be afforded the opportunity to consider the Association's views in its deliberation of the FY 1985 budget. Additional copies will be provided on request.

NCOA appreciates your concern and interest in the men and women who serve in the uniformed services.

Respectfully,

C. A. "Mack" McKinney
C. A. "Mack" McKinney
Executive Director for Government Affairs

Enclosure

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MR. CHAIRMAN. On behalf of the members of the Non Commissioned Officers Association of the USA (NCOA) I appreciate this opportunity to express the views of the Association. They have been formulated by the general membership in convention last July and through subsequent input from the senior enlisted chiefs of the armed forces and our members and other interested military personnel serving around the world wherever the United States has stationed its men and women in uniform.

This statement has but one general theme built around two major issues--military manpower and military compensation and related benefits. That theme is **"retention of qualified and experienced military personnel to ensure maximum readiness of our armed forces."**

WARNING SIGNALS

NCOA reminds this distinguished panel it was the organization that warned Congress nearly a decade ago, even before the military sounded the alarm, all was not well with military personnel. The Association's warnings went unheeded until the then Chief of Naval Operations told Congress the Navy could not get its ships to sea and the Army's Chief of Staff complained of having a "hollow" army. Both were suffering major shortages of qualified noncommissioned and petty officers and mid-grade commissioned officers. These servicemembers were leaving the military in droves. Most significantly was the loss of career personnel, those with 8-to-even-17 years of experience and knowledge in technical occupations and mid-level leadership positions.

In 1980 and 1981 Congress itself became alarmed. The actions it took in those two years halted the exodus and gave the military services the opportunity to steady their management of the forces. At the same time, high unemployment in the civilian sector sent hundreds of thousands of young men and women to recruiting stations across the nation. Accessions improved dramatically and retention rates climbed to record highs. The quality of personnel jumped most significantly, morale scored an all-time high, and military personnel readiness reached its best level in years.

Much of the same remains today but signs are beginning to spring up here and there that forecast harder times ahead.

*The economy is improving. In a NCOA survey conducted in the Norfolk-Virginia Beach area of Virginia more than 4,600 military respondents have answered the question: "To what extent does the state of the economy affect your decision to remain on active duty?" More than 44 percent (2,049) say "a lot." More than 34 percent (1,590) say "some". Only 21.4 percent (989) say "none."

*Civilian job market opening up again. Senior enlisted chiefs of all services are reporting to NCOA that there are increased numbers of first and second term enlisted personnel looking for civilian jobs so they may hang up their uniforms.

*Congressional actions and "perception" are causing concern. Pay caps and "freezes" on some allowances, inequitable permanent change of station (PCS) allowances, and threats to the current military retirement system as well as certain military benefits (i.e.--commissary stores) are reflections of the early and mid-1970s. It was almost these identical concerns that caused the mass exodus of the mid and late 1970s.

*"Walk-ins" at Army recruiting stations are declining. The reported 22% drop in available "walk-ins" will lower the number of non-prior service personnel that may be "pooled" for later assignments to active duty. Could be a major concern in 9-to-12 months.

*Some reserve forces are falling short in manpower goals. The Army's reserve units have experienced a 1500-man shortfall in meeting 1st Quarter, FY 1984, recruiting goals.

*The Navy's Recruiting Command is concerned. The Navy's top recruiting officer anticipates some difficulty during 1985 in meeting accession goals.

*Fewer recruitable-age youths will be eligible for military service. Reports from reliable sources indicate that because of a population shortfall there will be fewer youths available for recruiters to contact in the very near future.

*Reenlistment rates are dropping. The U.S. Army reenlisted only 96.6 percent of its objective for the last fiscal year. This was a decrease from the 98.3 percent attained during FY 1982.

*Lower mental groups reenlisting at a higher rate than others. In FY 1984, the Army has reenlisted more than twice the number of mental category IV soldiers than it did the next highest category (III-B). Cat. IV first-term reenlistments topped the ratings at 46.9 percent.

Any significant change in the current military retirement system will cause a drain of talent. In a world-wide NCOA survey initiated only last month many of the active duty respondents have alluded to leaving the military if Congress makes any change to the current military retirement system.

With these unpleasant but enlightening facts, NCOA is in hope that what it has to offer on military manpower and compensation will not be taken lightly by this distinguished panel. The members of this subcommittee will play a major role in sustaining the high-readiness posture of our armed forces in FY 1985, or relegating military personnel to a lesser role and, possibly, recreating the disastrous exodus of manpower experienced in the latter half of the 1970s.

ACTIVE DUTY STRENGTHS

For FY 1984 Congress made deep cuts in the Defense budget request for increases in active duty strengths. Instead, it adopted higher numerical levels for the reserve and guard forces.

Again this year DoD has asked for major increases in active duty year-end strength figures for FY 1985. And, again, there are those in Congress who believe the numbers can be shaved in favor of increased reserve forces without damaging the current manpower readiness posture.

There is nothing wrong in beefing up the reserve forces for mobilization providing reserve units are adequately equipped and have the proper facilities for training. This, however, is not the case for most units.

There also is no argument that reservists cost the government less than their regular counterparts. But there's something wrong in increasing the size of the reserves simply to save money or produce higher military manpower figures on the basis that numerical strengths will indicate this nation's resolve to meet its world-wide commitments. Neither alleviate the mounting problem of having insufficient manpower available to support the physical commitments given the active forces.

There's also something amiss in the idea that it's right to bring into the active forces more and more weapons, supportive systems and equipment while putting increases in active duty manpower on the back burner. Yet, at the same time, saying it's okay to add more reservists to the total force structure without providing modern weapons, systems and facilities necessary to properly train them for mobilization. It doesn't make good sense.

Currently the United States has about one-fourth of its active military strength committed to foreign duty, sea duty or deployments. Another 240,000-plus are stationed outside of CONUS in or around U.S. territories, Alaska, Hawaii, or at special locations. In CONUS there are a little more than 1.3 million servicemembers of which 300,000 or more are entering the military, leaving the military or undergoing initial or advanced training cycles. (See CHART 1).

CHART 1

ACTIVE DUTY PERSONNEL BY REGIONAL AREA

Sep. 30, 1983

1. TOTAL FOREIGN COUNTRIES:

Ashore	450,258
Afloat	69,259
2. TOTAL U.S. TERRITORIES OR SPECIAL LOCATIONS:

Ashore	78,068
Afloat	165,131
3. TRANSIENTS 59,350
4. CONUS 1,301,283

(Source: DoD Manpower Statistics, Oct. 1983)

The end result is two-fold: 1)- the military services have difficulty in trying to manage too many manpower commitments with too few servicemembers and insufficient permanent change of station (PCS) funds forcing them to lengthen overseas and sea duty tours and speed up the number of turn-arounds for servicemembers assigned to deployable units; and 2)- places considerable stress on military personnel which, if not relieved, will cause many to shed their uniforms for civilian attire. Congress cannot in these modern times with an active force that is more married than single expect servicemembers to accept frequent long and oft-times arduous assignments and family separations without an adverse impact on morale.

If Congress insists on reducing manpower costs by increasing reserve strengths, then let it pass legislation permitting the services to call to active duty certain individual reservists to relieve the pressure on the active forces. The military should be permitted to activate reservists for 36-to-48 months and assign them to overseas tours, sea duty tours or deployable units. Although their activation will save nothing while serving on active duty, they will cost less money over the long run than regular servicemembers.

COAST GUARD RESERVE

For FY 1984 Congress increased most guard and reserve strengths but seems to have forgotten the Coast Guard Reserve. NCOA encourages at least a 5 percent increase in this component for FY 1985 as the current strength of 12,000 is far short of the Coast Guard's wartime requirement.

There now exists a deficit of some 3,000-to-4,000 selected reservists required to meet the Coast Guard's existing mobilization plans. If that service is not authorized to correct the deficit over the next few years, it may not be fully prepared in the event of an emergency mobilization.

If ever a time is ripe to increase the Coast Guard Reserve it is now. With the economy improving and a shortage of eligible youths lurking on the horizon, FY 1986 may be too late to begin.

RECRUITING

Two military manpower proposals may be considered this year by Congress. The first would allow foreign youths to be recruited for the active military forces and the second would authorize the military to recruit youths for assignment to community and technical colleges while undergoing ROTC-like training then, upon graduation, enter active duty in noncommissioned or petty officer ranks as high as pay grade E-8.

NCOA urges the adoption of the first proposal, currently S. 2296, sponsored by the Honorable Strom Thurmond, U.S. Senator from South Carolina. The U.S. Army needs bilingual soldiers and there is no other way to obtain them than through this legislation.

NCOA strongly opposes the second proposal. The Navy recently attempted a similar program of offering lateral entry NCO/PO grades to experienced civilian technicians without success and over the objections of most of its senior enlisted petty officers. These programs may work if technicians could be separated from leadership positions. However, when end-strengths are reduced or there is a shortage of NCOs or POs, technicians have been thrust into positions of leadership. Although willing, their lack of experience in handling troops almost guarantees failure. There are other reasons to oppose this type legislation and NCOA will be pleased at the request of the panel to provide them for the record.

MILITARY COMPENSATION
AND RELATED BENEFITS

The NCO Association does not concur with the President's recommendation of another pay cap for FY 1985. Two pay caps already have been imposed these past two years on the military; one for 4% and the second for less than 4% because it was delayed for 3 months. The proposed pay hike also is a delayed increase which again reduces the percentage, this time below the recommended 5.5 percent.

NCOA suggests a 10 percent increase in pay. This would bring military wages close to "comparable" levels with civilian sector salaries. However, if Congress approves and funds all of the personnel programs contained in the defense request for FY 1985 and funds the programs authorized in previous years, NCOA would accept the 5.5 percent pay increase but only as a minimum base.

The Association conducted two limited studies over the past 2-to-3 months. The first resulted in the discovery that the estimated average costs of Regular Military Compensation (RMC) for enlisted personnel of the armed forces in 1982 fell below the average pay of civilian workers in the state having the lowest average wage in the United States. When adding two 4 percent increases for 1983 and 1984, the estimated average RMC cost per enlisted servicemember in 1984 still remained below the average pay of civilian workers in the state having the second lowest average wage in the United States for 1982.

For all servicemembers, the average estimated cost of RMC for 1982 was in the bottom 16 percent of the States with the lowest average civilian wages for that year. Again, bringing the 1982 estimated average cost of RMC up to the 1984 level, the all-servicemembers group remains in the bottom 45 percent of the States having the lowest average civilian wages for 1982.

The following chart provides a much more visual perspective for the above comparisons.

CHART 2

Average Civilian Pay, 1982- State By State- Compared to
Estimated Average Cost of Regular Military Compensation
1982 & 1984

1984 Cost of RMC Per Servicemember	Civilian Pay-1982	1982 Cost of RMC Per Servicemember
	Average Wage	
	Alaska	\$27,804
	Dist. of Columbia	\$22,537
	Michigan	\$18,898
	New York	\$18,530
	Wyoming	\$17,800
	California	\$17,879
	Illinois	\$17,803
	New Jersey	\$17,808
	Washington	\$17,752
	Connecticut	\$17,648
	Delaware	\$17,553
	Texas	\$17,408
	Colorado	\$17,382
	Ohio	\$17,155
	Louisiana	\$17,083
	Chadron	\$16,786
	U.S. average	\$16,732
	West Virginia	\$16,689
	Florida	\$16,472
	Pennsylvania	\$16,446
	Indiana	\$16,387
	Minnesota	\$16,377
	Massachusetts	\$16,333
	Maryland	\$16,246
	Oregon	\$16,180
	Arizona	\$16,012
	Missouri	\$15,970
	Utah	\$15,904
	Washington	\$15,874
ALL MEMBERS		
\$15,421		
	Virginia	\$15,811
	Kentucky	\$15,488
	New Mexico	\$15,389
	Nebraska	\$15,381
	Kansas	\$15,277
	Georgia	\$15,147
	Alabama	\$14,780
	Florida	\$14,787
	Mississippi	\$14,786
	Tennessee	\$14,763
	Arkansas	\$14,752
	Idaho	\$14,680
	North Dakota	\$14,626
	New Hampshire	\$14,616
	Rhode Island	\$14,533
	Delaware	\$14,057
	North Carolina	\$13,831
	Vermont	\$13,802
	South Carolina	\$13,799
	Arkansas	\$13,636
	Monte	\$13,488
ENLISTED ONLY		
\$12,982		
	Mississippi	\$12,429
	South Dakota	\$12,702
		ALL MEMBERS
		\$14,258
		ENLISTED ONLY
		\$12,083

NOTES:

RMC is the total of estimated costs of basic pay and quarters (BAQ) and subsistence (BAS) allowances, plus tax advantages, for 1982. Cost estimates for 1984 were computed by adding 4% increases for each of the following 2 years.

Adding 1982 variable housing allowances (VHA) for all enlisted members increases the estimated average cost of RMC for Enlisted only to \$12,265-still below the lowest average civilian wage by State. For all servicemember the 1982 cost would be \$13,291 but still below the average civilian wage for the State of Mississippi.

SOURCES:

Civilian Pay- U.S. News & World Report (from Dept. of Labor data)

RMC- Military Compensation Background Papers, Second Edition, July 1982, Dept. of Defense.

In the second study, a comparison of military pay with that of federal civil service employees for 1942 through 1983, NOAA found that the federal pay of those nearest to the highest military pay scales in 1942 for five randomly selected pay grades has increased at a much greater pace than those of the military. (See following chart.)

CHART 3

MAXIMUM ANNUAL COMPENSATION
FOR FIVE MILITARY PAY GRADES
COMPARED TO NEAREST FEDERAL
EMPLOYEE PAY GRADES--1942 & 1983

1942			
MILITARY		CIVILIAN	
GRADE ^{1/}	SALARY ^{2/}	GRADE ^{3/}	EQUIVALENT SALARY
O-5	\$8,196	CAF-15B	\$8,250
O-3	\$6,516	CAF-13B	\$6,500
E-7	\$4,284	CAF-10C	\$4,100
E-6	\$3,852	CAF- 9C	\$3,800
E-5	\$3,528	CAF- 8C	\$3,500
1983			
MILITARY		CIVILIAN	
GRADE ^{1/}	SALARY ^{2/}	GRADE ^{3/}	EQUIVALENT SALARY
O-5	\$46,452	GS- 15/2	\$50,171
O-3	\$31,999	GS- 13/2	\$36,894
E-7	\$26,996	GS-10/10	\$29,003
E-6	\$20,916	GS- 9/10	\$26,331
E-5	\$18,263	GS- 8/10	\$23,838

NOTES:

- 1- Equivalent 1983 pay grade
- 2- Maximum salary earned by the pay grade (at left) that includes basic pay and quarters (BAC) and subsistence (BAS) allowances. VHA was not included for two reasons; 1)- was not paid to servicemen until FY 1981 and 2)- was paid to less than 1/3 the enlisted grades and 56% of the officer grades. Avg. payments in 1983 were about \$845 for enlisted and \$1,067 for officers.
- 3- Civilian pay grades for 1942 were converted in 1962 to the pay grades identified for 1983

SOURCE:

Military Pay- Department of Defense
Civilian Pay- Office of Personnel Management

In the mid-level pay scales for the military grades referenced above, NCOA also found that an E-7 with 14 years of service could earn a maximum of \$3,787 annually in 1942. The nearest federal employee grade earning close to that amount was a CAF-10F at \$3,800 (\$4000 minus \$200 contribution to the civil service retirement fund).

By 1984, the E-7 grade offered a maximum salary of \$21,927 (\$23,136 less social security contributions of \$1209) while the federal grade, now a GS-10, Step 6, offered annual wages of \$24,702 (\$26,938 less retirement and old age health insurance contributions of \$2,236).

For a 10 year period, 1975-1984, the federal grade offered an estimated \$37,000 more in salary than that of the military's pay grade E-7.

No doubt there will be those who disagree with the above figures, especially for the military pay grades. The claim will be NCOA has failed to include additional costs, most of them "in-kind", associated with military compensation; i.e.- health care, housing, tax advantages, retirement, bonuses, special pays, commissary and exchange privileges and morale, welfare and recreation facilities. However, NCOA firmly believes that since the same costs normally are not included in civilian salaries, they should not be counted as part of a servicemember's annual pay.

However, if some insist on counting all the "beans that go into the pot," NCOA recommends they also thin down the soup by crediting servicemembers with all the "niceties of life" missed while aboard ship--some for as long as 9 months or more--or deployed in foreign countries, as was the case in Lebanon, for months at a time and for some, 2 or 3 tours.

And let's not forget the ones who are serving or have served in Korea or those who served in Vietnam, many of the latter still on active duty. Certainly, they should be given credits instead of debits. A few suggestions for credits are listed below.

- . Living in bunkers, quonset huts, crowded berthing spaces, substandard quarters, tents, or in-the-open in lieu of housing or adequate quarters.

- . Separations from family.

- . Working in inclement weather and the elements, substandard facilities, crowded spaces, and/or without adequate equipment instead of a climatically-controlled building with adequate space and equipment.

- . Working in dangerous areas where someone wants to end a servicemember's life. (Credits to be given each time someone fires a weapon at one of our servicemembers.)

- . Eating cold or luke-warm food while sitting on a cold ground or in-the-open sharing "tid-bits" with insects instead of eating hot food in a dining facility.

- . Working overtime without pay or standing watch or additional duties over the weekend when the Servicemember would rather be doing something else.

- . Moving every two-to-four years involuntarily with reimbursements far below expenses.

These suggestions could go on for pages but NCOA believes the reader can get the idea that there are far more credits to be given our servicemembers than debits. This is why NCOA urges Congress to authorize and fund improvements in pay and compensation for our military personnel. The idea that pay caps, delays in pay increases and failures to authorize and/or fund certain military "people" programs is justified because of current successes in recruiting and retention, or because they hold down the soaring deficit, is pure nonsense.

Recruiting and Retention

The success the uniformed services have enjoyed in recruiting and retention can be principally attributed to the sputtering economy. A historical review of these programs since World War II proves that when the economy is good recruiting and retention suffer. When the economy is on the downside, as it has been in the immediate past years, military manpower is blessed with the best of times.

Congress must not permit current successes to cloud the future and continued need for quality, experience and knowledge. Each are vital to the readiness of the uniformed services to meet their assigned missions.

To ensure that the services are able to recruit and retain high-caliber personnel, Congress must heed the few warning signs mentioned at the beginning of this statement.

Use of a Draft

There are those who'll say a return to the draft will cure any future losses. NCOA views such a suggestion as archaic, costly and, most of all, not in the best interest of the uniformed services. The United States need not return to the draft unless there is a national emergency demanding universal service.

The use of the draft in other than a national emergency is neither practical, cost-effective nor politically feasible. The draft at this time would not assure qualitative distribution nor could it be universally administered. Obligated active-service would have to be for shorter periods than volunteer enlistments, thereby, providing insufficient training time in the use, repair and maintenance of sophisticated weaponry dominating current and future defense arsenals. The only cost-effective and practical answer is to retain the All-Volunteer Force.

To do so, Congress must be willing to support that force by providing fair and adequate compensation. With the current demand on volunteers to once again lay their lives on the line for the defense of this Nation and for world peace, adequacy becomes a question of not dollars and cents but what this Congress and the citizens of the United States are willing to pay.

Deficit Spending

The case for savings in deficit spending by reducing the military personnel account is a weak one. There are many expensive weapons systems being approved that could be delayed or decreased in numbers so a fairer compensation may be provided to servicemembers. The argument that these highly-sophisticated weapons are needed more so than quality manpower is utterly ridiculous. There is no rhyme or reason why the armed forces first must have one without the other.

An excellent argument might be centered around the Navy's proposed 600-ship fleet. Sacrificing manpower for ships will resurrect the same problem mentioned earlier. There will not be enough experienced petty officers to take the ships to sea.

Special Pays

In reviewing the special pays and other allowances of military personnel NCOA is puzzled why Congress has long held that those who assume equal risks are not entitled to equal pay. For sound reasons commissioned officers receive higher compensation because they have greater responsibilities. However, when it comes to hazardous duties one man's life and limb is as dear to him as to another.

Currently funds are provided to pay officers \$110 each month while performing such duties but only \$83 to enlisted personnel. These payments are made to "increase the ability of the uniformed services to attract and retain volunteers for hazardous duty and to compensate for the more than normally dangerous character of such duty." Nothing in this statement justifies an inequitable rate of pay between the officer and enlisted grades.

It is the Association's understanding DoD's Fifth Quadrennial Review of Military Compensation (5th QRMC) has recommended that enlisted rates for Flight Deck Duty Pay, Demolition Duty Pay, Parachute Duty Pay, Experimental Stress Duty Pay, Personal Exposure Pay, and Non-Crew Flight Pay be increased to match those for commissioned officer. NCOA agrees and urges Congress to adopt this recommendation for FY 1985.

Moving Allowances

For some years efforts have been made to increase the allowances for moving expenses incurred by our servicemembers. In studies conducted by the United States Air Force it was apparent that most if not all servicemembers were reimbursed for such expenses at less than the payment available to a comparable federal employee.

For example: The study found that a servicemember, pay grade E-7, moving from the Nation's Capital to San Antonio, TX, as a result of involuntary permanent change of station (PCS) orders, with 3 dependents, would be reimbursed a maximum of \$1,602.87. Comparatively, a GS-9 federal employee could receive \$15,055.40 for making an identical move with the same number of dependents.

DoD has been unable to increase PCS allowances because Congress has failed to appropriate the necessary funds. Both Senate and House Appropriations Committees believe DoD could better manage PCS funds and, therefore, has cut-back on requests for higher appropriations.

Whether Congress is justified in pursuing this line of reasoning is not the subject of these remarks. What is the issue is fairness and equity. NCOA believes Congress should not penalize our servicemembers because it does not agree the military departments are properly managing PCS funds.

NCOA further believes it is blatantly unfair to provide greater reimbursements to federal employees for expenses of moving than for those incurred by military personnel.

To provide some equity, NCOA urges Congress to authorize increases in Household Goods Weight Allowances for senior officers, warrant officers and enlisted personnel, increase mileage reimbursements to 15¢ a mile and provide additional funds for implementing these new allowances. NCOA also requests that the Temporary Lodging Expense (TLE) program, authorized by earlier legislation, be funded in FY 1985.

The current Household Goods Weight Allowance (HHG-WA) really needs to be increased for all servicemembers. Except for two increases for junior enlisted personnel in 1974 and 1978, no raise in this allowance has been authorized since 1966. Allowances for senior personnel, however, need to be increased to more equitable levels to reflect changes in life styles.

The changes have occurred as a result of military policy. Some years ago most senior personnel resided in government-furnished quarters on military installations. Therefore, they did not require higher allowances to move their household effects. Today, due to a reversal in military housing assignments, more senior personnel are living off-post in the civilian community. They have acquired more household furnishings which they are forced to sell at a loss or move at their own expense when in receipt of PCS orders.

These few concessions are a small price to pay for improving the quality-of-life for our valued servicemembers. When one considers a federal employee may be reimbursed for travel and transportation for himself or herself and a spouse to look for new residential quarters prior to making the actual move, for use of temporary quarters, and the expenses paid in connection with the sale of an old residence and the purchase of a new one--or the settlement of an unexpired lease--none of which are available to servicemembers, NCOA believes these requests are truly fair and equitable. Congress should approve them for FY 1985.

Other Allowances and Special Pays

NCOA encourages Congress to authorize and fund increases and improvements in the following allowances and special pays.

***Special Pay for Recruiters, Drill Instructors and Personnel Assigned to Independent Duty.** Increase maximum pay to \$275 a month dependent on assignment and proximity to military facilities. For example, recruiters and others assigned duties where military medical care, commissaries, exchanges and other facilities are not within commuting distance should be entitled to the maximum payment. Others, close to or working on military installations, would receive payments based on job-stress (i.e.-drill instructors) or on responsibility.

***100% CHAMPUS for Certain Dependents.** Provide 100 percent of established CHAMPUS fees as reimbursable to dependents accompanying military personnel assigned to locations outside commuting distances to military medical facilities.

***Hostile Fire Pay.** Increase monthly payments to the same amount(s) paid as the lowest hazardous duty incentive pay(s). HFP, first offered in 1952, was increased to its current level (\$65) in 1965. Its purpose was "to provide special recognition for the rigors and hazards of combat duty by equalizing extra compensation between combat personnel and personnel entitled to (other hazardous duty incentive pays)." Since 1965 all other hazardous pays have been increased. To equalize the special recognition, HFP should be raised to the lowest payment available for performing other hazardous duties (i.e.- parachute pay).

***Selected Reenlistment Bonuses (SRB).** To insure the retention of qualified personnel, particularly those performing in short-skills, Congress is urged to extend SRB authorization and funding through FY 1985.

***Family Separation Allowance (Type II).** Involuntary assignments force servicemembers to live apart from their families. Additional costs, that can be substantial, are incurred by both the member and the spouse. Congress in 1963 recognized this additional financial burden imposed on military personnel and authorized monthly payments of \$30 to help offset these costs. Inflation has significantly reduced the value of this allowance. Congress is urged to increase the amount to \$60 per month for eligible servicemembers.

***Sea Duty Pay.** The Navy is short 9,000 petty officers. Unless improved incentives are offered to those that now have to spend longer and more frequent tours at sea, particularly POs with 12-to-20 years of service, more career enlisted personnel may not reenlist. Increasing career sea duty pay as recommended by the Navy will provide retention insurance for future years.

***Standard Cash Clothing Maintenance Allowance (CMA).** A number of enlisted members have registered complaints that the CMA is insufficient to maintain enlisted uniform allowance requirements of the services. Once the initial clothing issue needs replacement, the allowance is not sufficiently adequate to purchase and maintain the required uniforms. Unlike civilians who may be able to do so, servicemembers cannot deduct costs of uniform maintenance or purchases in excess of the CMA. This allowance should be increased after the 36th month to \$15-to-\$20 monthly per servicemember. Currently, the estimated average monthly payment is plus or minus \$11.00.

***Enlisted Flight Pay (Crew Member).** Reportedly DoD will recommend improvements in the enlisted crewmember flight pay program. NCOA believes the recommendation is justifiable and should be adopted by Congress for FY 1985.

***BAQ and VHA Allowances.** The threat by IRS to rule that BAQ and VHA should be added to a servicemember's reportable gross income for tax purposes--if the member is living in his or her own home--is a blatant attempt to further reduce the compensation of military personnel. Hopefully Congress will act statutorily early enough to halt IRS so there will continue a tax incentive encouraging service members to purchase their own homes. Homeowning by servicemembers adds to the local economy, provides taxes for civilian community services and reduces the demand for military housing. NCOA believes these benefits far outweigh the money IRS will collect through a change in the current tax policy.

NATIONAL SECURITY AND INTERNATIONAL AFFAIRS

TUESDAY, FEBRUARY 21, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 2:30 p.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Kassebaum, Symms, Grassley, Kasten, Quayle, Gorton, Chiles, Biden, Johnston, Sasser, Metzengbaum, Riegle, and Exon.

Staff present: Stephen Bell, staff director; and Charles Flickner, senior analyst for national security and international affairs.

For the minority: Richard N. Brandon, staff director; and Douglas Olin, senior analyst for national security affairs.

OPENING STATEMENT OF CHAIRMAN DOMENICI

Chairman DOMENICI. Could we have order, please?

It is with a great deal of pleasure that I welcome our distinguished witness, Secretary of State, George Shultz.

Mr. Secretary, I appreciate your fitting this hearing into your busy schedule. I am told that you have had only a brief time to recover from a recent, lengthy trip to Latin America and the Caribbean, and I appreciate that, too.

This marks the second year in a row that you have come before this committee. Last year, we had a very useful discussion of the impact of the international economy on our domestic budget. We again welcome comments on that subject, but this year we are also interested in your justification of the international affairs part of our Federal budget.

As you know, this committee does not pass on the propriety of the individual programs, but nonetheless, we do establish some targets for international programs that have had some real relevance from time to time.

It is unusual for our committee to call a hearing to discuss a single function of the budget other than defense. Let me explain a little bit of the reasoning behind it.

REQUESTS FOR INTERNATIONAL PROGRAMS SHOW SIGNIFICANT GROWTH

According to the President's budget, actual spending or outlays for all nondefense discretionary programs, including international affairs will increase by about \$4 billion between 1984 and 1985. In

dollar terms, this is almost the exact amount of the year-to-year increase for the international programs alone, from \$13.5 to \$17.5 billion.

In other words, all of the other nondefense accounts taken as a group are relatively frozen or without any significant growth, while the international programs, if the President's requests are granted, will grow somewhere between 20 and 30 percent.

You must have used many of your skills as a former Director of the Office of Management and Budget to convince the President to agree to this exception, and there is an exception in the budget for the international programs. I hope that you will use this opportunity—and I am sure you will—to make your case for the international budget to the members of this committee.

We are likely to be the first congressional committee to consider your request, and therefore, I think it is important that you help us today. We will have to do this work within the next 3 to 4 weeks.

I would like to quickly cover three areas—the relation between the budget request and our Middle East policy; the connection between the budget request and the recommendations of the Bipartisan Commission on Central America, and third, an update on efforts to resolve the international debt problems that you discussed with us last year.

FINANCING MILITARY SALES IN THE MIDDLE EAST

The major budgetary change is the shift from off-budget guarantees to on-budget direct loans for the financing of military sales. In the Middle East this year, all financing of military sales to Egypt and Israel will be on a concessional basis. Until now, at least half of the financing for these two countries has been in the form of guarantees with higher interest. This shift will have significant impact on the appropriations totals, but as a matter of fact, very little real economic budgetary impact. Your proposal puts them on-budget, whereas heretofore, they were off-budget.

The appropriations for Egypt and Israel were \$3.4 billion for fiscal 1984. The fiscal 1985 request is for \$4.4 billion—an increase of \$1 billion.

RECOMMENDATIONS OF BIPARTISAN COMMISSION ON CENTRAL AMERICA

There has been a great deal of discussion of the recommendations of the Bipartisan Commission on Central America. Although the Commission recommended a 5-year authorization and multiple-year appropriation of \$8 billion, the administration is requesting appropriations for fiscal 1985 only and a supplemental for the current year. The actual appropriation request for the region, both economic and military, is about \$1.4 billion in fiscal 1985. It was \$750 million in fiscal 1983.

I would observe that less than 20 percent of that fiscal 1985 request is for military assistance.

INTERNATIONAL DEBT CRISIS

The debt crisis of last year has not disappeared. Some countries, such as Mexico, appear to have accepted adjustment in programs and other kinds of changes. It appears that the crisis there has somewhat abated, although we will not know the final score for a few more years. New countries such as the Philippines come under the spotlight because of their inability to carry out their debt service in a normal manner.

In all of these areas, and others that you may wish to discuss, it would be useful if you could relate the narrow budgetary and financial concerns to the broader question of national policy. Specifically, we would value your views on the consequences in particular regions of freezing international appropriations at the 1984 Continuing Resolution level.

I know it is a tough job to sell this program to Congress in any year; I think it will be even more difficult this year.

So we look forward to your testimony and to your discussion and good, commonsense here today.

Having said that, we will proceed, Mr. Secretary, to your testimony.

Your written testimony will be made a part of the record, and that of any of your associates.¹ We would appreciate it if you would summarize, so that we will have an hour, an hour and a half, I would think, for the Senators' questions.

Thank you very much, Mr. Secretary.

**STATEMENT OF HON. GEORGE P. SHULTZ, SECRETARY OF STATE,
ACCOMPANIED BY PETER McPHERSON, DIRECTOR, U.S.
AGENCY FOR INTERNATIONAL DEVELOPMENT**

Secretary SHULTZ. Thank you, Mr. Chairman. I appreciate your thoughtful and probing opening statement.

As you noted, I do have a longer, voluminous statement, which you have said could be in the record, and I will read a very much shortened-down version, recognizing that, probably through questions, we can bring out the things that are of most interest to you.

Last year, when I appeared before this distinguished committee, as you noted, I addressed the important relationship between our foreign policy objectives to promote growth and stability in the international economy, to safeguard peace and security, and to extend the benefits of democracy and freedom.

FOREIGN ASSISTANCE PROGRAMS EXAMINED

Since then, two commissions of citizens and Members of Congress examined our foreign assistance programs in 1983. The Commission on Security and Economic Assistance, headed by Frank Carlucci, reviewed our overall program. The National Bipartisan Commission on Central America reviewed our national goals and needs for assistance in Central America. More than two dozen Members of Congress served with these two commissions in various capacities, so you can see what we have tried to construct, were commissions

¹ See p. 160.

that had a variety of expertise on them and included Members of Congress, so that we could develop a sense of broad thinking across the bipartisan spectrum. We are indebted to these members and all commission participants for their excellent work.

We are particularly gratified that these citizens—Republicans, Democrats, liberals, conservatives, businessmen, labor leaders, and academics—reached a clear consensus on the importance of foreign assistance.

The Carlucci Commission concluded: “* * * on balance, it is the judgment of the Commission that U.S. assistance programs make an indispensable contribution to achieving foreign policy objectives.”

Both commissions concluded that economic and military assistance are equally servants of our national interest. Economic growth contributes to security; security is an essential attribute for economic growth.

Both commissions believe that current levels of foreign aid are inadequate. The Carlucci Commission states: “To meet U.S. foreign policy objectives, significant increases in real levels of assistance will be required”—I would like to underline that: “to meet foreign policy objectives.” We are not talking about how much money the United States should give away to other people. We are talking about trying to pursue our objectives around the world and using our assistance to help do that.

Mr. Chairman, my full statement builds on the foundations laid by the Carlucci and Bipartisan Commissions. It describes the U.S. security and economic interests which our fiscal 1985 program seeks to serve in each region.

I will in these opening remarks describe briefly our overall request and then focus on our proposals for Central America, Africa, and the Middle East.

OVERVIEW OF 1985 BUDGET AND 1984 SUPPLEMENTAL

Funding for our conduct of international relations is centered in function 150. Outlays for fiscal 1985 are estimated to be \$17.2 billion. Too often this function is viewed simply as foreign aid. In fact, in fiscal 1985, only 68 percent of the outlays relate to bilateral and multilateral aid. The remaining portion funds operation of the Department of State, USIA, our assessed contribution to the U.N. systems, operations of the international radios, and the Export-Import Bank. Cuts against function 150 directly and unmistakably imperil our ability to conduct the Nation's foreign policy.

Several major new initiatives are included in function 150 this year. These include additional funding for the Department of State, particularly to strengthen security and modernize communications; funds to increase transmissions by VOA and Radio Free Europe/Radio Liberty; additional funding for Central America as recommended by the Bipartisan Commission, on which several of you served, and our request that the entire foreign military sales credit program be placed onbudget.

The foreign assistance program for fiscal 1985 totals \$15.8 billion, of which \$1.5 billion is multilateral aid, and \$14.3 billion is bilateral aid. This includes \$9.4 billion in economic assistance and \$6.4 bil-

lion in military assistance. For fiscal 1984, we are seeking supplemental funds of \$1.1 billion, including \$400 million for emergency economic assistance to Central America and \$259 million for military aid to the region.

Our economic aid in fiscal 1985 will focus on increasing food production and reducing hunger; improving health, especially reducing infant and child mortality; reducing population growth; spreading education and literacy, and improving host-country financial structures.

Outlays for military assistance rise nearly \$1.5 billion. However, overall, on- and off-budget, military assistance increases just over 1 percent, that is, about \$81 million, compared with the CR level, and it actually declines by \$177 million if our fiscal 1984 supplemental requests are included.

In military assistance, we have made a significant change so that we can lower interest rates on loans to poor or debt-burdened countries. Over the past decade, military assistance has increasingly been provided as off-budget loans, with interest rates equivalent to the cost of money to the Treasury. As a result, the Carlucci Commission reports that the 21 countries receiving substantial military and economic assistance in 1982 were charged an effective rate of approximately 9 percent in military assistance against only 1 percent for economic assistance. This has meant in some countries that military assistance repayments have become a large fraction of these countries' debt service, consuming foreign exchange needed for growth.

In response, we have moved all military assistance onbudget, a step which Congress has long urged. And, speaking as a former Budget Director, I agree with that. By so doing, we are able to provide military assistance loans either at a concessional rate or at cost of money to the Treasury, depending on conditions in specific countries. This decision is a key step toward a more effective management and integration of our military and economic assistance programs.

CENTRAL AMERICA, THE CARIBBEAN, AND SOUTH AMERICA

Mr. Chairman, the National Bipartisan Commission concluded its study, quote: "persuaded that Central America is both vital and vulnerable, and that the United States cannot afford to turn away from that threatened region." I think that is a very important conclusion for a bipartisan commission to reach, because once you have accepted it, if you do, then a lot of things have to follow from that—and that does not mean that the answers are automatic, by any means, but it means that you have to have some substantial answers; if you do not like the ones of the commission, you have to step up with something that meets the gist of that quotation.

The Commission emphasized that Central America is in midpassage from predominantly authoritarian societies in the past to what, with determination and help, can become predominantly pluralistic and democratic societies in the future. That passage is marked today by warfare, poverty, and political extremism from the left and right. It creates conditions which Cuba and the Soviet

Union seek to exploit for their own strategic, economic, and political purposes.

The United States has a profound interest in helping the people of Central America move from these travails to a future of greater economic and social justice. We have a vital interest in helping our friends block the Soviet Union from consolidating a foothold in Central America, and most basically, progress in this hemisphere means the advancement of our fundamental values—democracy and the rule of law.

President Reagan earlier this month quoted Senator Henry Jackson's remarks when he recommended establishing a bipartisan commission. Scoop said:

Whatever policy options might be available to us, ignoring threats to the stability of Central America and refusing to engage ourselves in the problems of the region are not among them.

The Commission recommended, and we concur, that our engagement in the region should be comprehensive, a mix of developmental, political, diplomatic, and security measures. Because many of Central America's problems are rooted in poverty, our largest commitment of resources will be for economic reconstruction and revitalization.

Of the supplemental funds we are requesting for Central America in fiscal 1984, \$400 million, or 61 percent, are for emergency economic assistance. In addition, we are proposing a 5-year, \$8 billion program for economic stabilization, reconstruction, and long-term development. These funds will support agricultural development, education, health services, export promotion, land reform, housing, and humanitarian relief, as well as trade-credit insurance and aid for small businesses.

The Commission also recognizes that economic aid and support for democratic reform are not by themselves sufficient, therefore, recommend significantly increased military aid for El Salvador. To see only indigenous social upheaval in that country, for example, is as shortsighted as to recognize only the role of Cuba and the Soviet Union. Our aid supports the moderate center. If we give inadequate help, it is the moderates who will be the victims. In the words of the report, quote: "The worst possible policy for El Salvador is to provide just enough aid to keep the war going, but too little to wage it successfully."

We endorse the Commission's proposal to establish a Central American Development Organization, including representatives from the Central American countries themselves. Its independent recommendations will affect our determinations on the level and structure of our economic assistance.

In the vital task of strengthening democracy, we are proposing aid to democratic, educational, and cross-cultural institutions, as well as increased funding for scholarships, leadership training, and educational exchange.

Mr. Chairman, the President's program for Central America is ambitious and comprehensive, consistent with the challenge we face. We urge your support.

AFRICA FACING STARVATION CRISIS

I turn now to Africa, which faces a much different, although perhaps equally serious crisis. Drought is widespread. As some Members of Congress, most recently, Senator Danforth, have eloquently reported, starvation stalks the continent. In response, the United States has committed nearly 200,000 tons of food from our emergency title II reserves. The requests from African governments for about 280,000 additional tons are either in hand or expected later this year. We are, therefore, requesting Congress to approve an additional \$90 million in Public Law 480, title II, for Africa in fiscal 1984. When people are dying, common decency compels us to respond.

Africa's difficulties have longstanding origins. Food production per capita has fallen by over 20 percent since the 1960's. Over the past decade, the national products of 15 African countries declined. A primary cause of this decline is that many African countries have followed policies which do not produce growth. Pervasive state controls, bloated state enterprises and bureaucracies, overvalued currencies, and disincentives for agriculture all stifle the private sector and individual initiative. Because of these problems, a number of countries in Africa are undertaking policy reforms. To encourage this process, the President is proposing beginning in fiscal 1985 an economic policy initiative for Africa.

This effort has three components. First, we are proposing a 5-year, \$500 million program, beginning with \$75 million for 1985, as an additional fund specifically to assist African countries establish and implement growth-oriented economic policies. We will give particular attention to reforms which increase food production.

Second, we are working with other donors, particularly the World Bank, to coordinate our aid efforts better and provide more unified support for policy reform in Africa.

Third, we will continue to direct our ongoing development assistance to helping build the skills and institutions needed to carry out better policies effectively.

With more effective policies and continued investment by Africa, the United States, and other donors, Africa can resume the progress which marked its first years of independence. A growing Africa will not only provide for the welfare of its citizens, but also be a positive force in the whole world economy.

MIDDLE EAST AND SURROUNDING REGIONS; SOUTHERN EUROPE

We now turn to the Middle East and surrounding regions, an area where security has become a predominant concern. Parts of this area are rife with threats to peace, not just regional peace, but world peace. About half of our total fiscal 1985 foreign assistance request is directed to promoting our national interests in this area—interests which also can profoundly affect Western Europe, Japan, and the rest of the free world.

Our highest priority continues to be a just and lasting peace in the Middle East. Israel and Egypt, at peace now for almost 5 years, have thus far been our principal partners. Our programs with these states have three aims: Nourishing the economic growth which underpins their security; sustaining their military forces,

and in the process, providing the confidence and security they need to continue their support for the peace process.

We have made significant changes in the military assistance for Israel and Egypt. To reduce debt-serving burdens, the administration is recommending that all military assistance to these two countries in fiscal 1985 be granted. Because grants are more valuable than loans, and because of the cash flow requirements of these programs, we have reduced our military assistance request for both countries below the levels made available in recent years.

We have discussed these proposals with Israel and Egypt. There is general agreement that these levels and terms support our mutual goals.

The measures the President recently outlined reorient U.S. political and military resources in Lebanon to strengthen our ability and sustain our efforts. The United States will remain fully engaged. We will continue our efforts to bring all sides to the bargaining table. We will continue to press the Lebanese Government and the opposition alike to move toward political accommodation.

Consistent with our policy, we will focus on ways to strengthen the Government's armed forces as a key element in a stable Lebanon. The funds we have requested in the current budget are part of that continuing program.

The oil-producing states of Southwest Asia are vulnerable to outside threats and internal subversion by externally supported elements. Some of their neighbors, such as Sudan and Somalia, face in addition the inherent instabilities which arise from poverty and ethnic divisions. Our programs in these areas seek to alleviate these instabilities. At the same time, we are supporting countries that provide access to facilities and cooperative security arrangements, which our forces would need in order to operate in that area should that ever be necessary.

The Middle East and environs are a cauldron of instability. Vital United States and Western political, strategic, and economic interests are at stake. Our security and economic assistance programs in that region are a fraction of a fraction of what we spend for national security through the defense budget, but they are no less critical to the security and welfare of each American citizen.

OTHER REGIONS OF CONTINUED SUPPORT

There are other important parts of our program, which I describe in my full statement. We continue to support Turkey's recovery from its economic difficulties in the late 1970's. We propose funds to continue military modernization in Turkey, Spain, Portugal, and Greece. We continue to support Asia's healthy economic growth, shore up the security of Thailand and Korea, as well as provide support for our bases in the Philippines. Assisting Asia's rapid growth has provided and will provide direct benefits to the United States in terms of markets for exports and for investment. We also continue strong support for the multilateral development banks as a cost-effective means of providing capital for growth in developing countries.

Mr. Chairman, the Carlucci Commission concluded that the foreign aid program is vital to our national interest. My brief remarks

today and my full statement try to show why this is so, region by region.

A world of stability and progress cannot be built by the United States alone. Therefore, strengthening our friends must be a central component of our foreign policy in both the economic and security dimensions. There is always a temptation to cut corners here and there in the aid budget. It is unwise to get into this temptation; it is penny wise and pound foolish. Strengthening our friends is generally an effective way to avoid major problems down the road—problems that could end up costing us much more in resources and sacrifice.

We urge Congress to endorse the work of both the Carlucci and Bipartisan Commissions by supporting and passing the budget request we have made.

Thank you, Mr. Chairman.

Chairman DOMENICI. Thank you very much, Mr. Secretary.

[The prepared statement of Secretary Shultz follows:]

Statement by

The Honorable George P. Shultz

before the

Committee on the Budget

United States Senate

February 21, 1984

Last year when I appeared before this distinguished Committee, I addressed the important relationships between our foreign policy objectives to promote growth and stability in the international economy, to safeguard peace and security, and to extend the benefits of democracy and freedom.

In the intervening months, two Commissions of citizens and Members of Congress have examined our programs. The Commission on Security and Economic Assistance, headed by Frank C. Carlucci, reviewed our total foreign assistance program. The National Bipartisan Commission on Central America, headed by Henry A. Kissinger, reviewed our national goals and needs for assistance in Central America. More than two dozen Members of Congress served with these two commissions as members, ex-officio members, or senior counselors.

We are indebted to these Members and all commission participants for their excellent work.

We are particularly gratified that these citizens -- Republicans, Democrats, liberals, conservatives, businessmen, labor leaders, and academics -- reached a clear consensus on the importance of foreign assistance.

The Carlucci Commission concluded: "The instrumentalities of foreign assistance are potent and essential tools that advance our interests....On balance, it is the judgment of the Commission that U.S. assistance programs make an indispensable contribution to achieving foreign policy objectives."

Both Commissions concluded that economic and military assistance are equally servants of our national interests. The Carlucci Commission notes that rising standards of living in the Third World are vital to internal stability and external defense. Conversely, threats to stability impede development.

In a similar vein, the Bipartisan Commission characterizes the problems of Central America as a "seamless web" which can't be defined solely in economic, political, social or security terms.

Both Commissions believe that current levels of foreign aid are inadequate. According to the Carlucci Commission, "in real terms . . . U.S. assistance expenditures over the last five years have averaged some 21 percent below those of a comparable period ten years ago." The Commission states: "To meet U.S. foreign policy objectives, significant increases in real levels of assistance will be required."

The Bipartisan Commission, having focussed on the problems of one region, also concludes that significantly more resources are needed to meet our national interests there.

In my testimony today, I want to build on the foundations laid by these two Commissions.

Our foreign assistance program serves four U.S. interests:

- Our interest in a growing world economy which enhances the well-being of citizens in both the developing and the industrialized world.
- Our interest in security -- protecting our vital interests abroad, strengthening our friends, contributing to regional stability, and backstopping our diplomatic efforts for peaceful solutions to regional problems.
- Our interests in building democracy, and promoting adherence to human rights and the rule of law.
- Our humanitarian interest in alleviating suffering and easing the immediate consequences of catastrophe on the very poor.

A world of stability and progress cannot be built by the United States alone. Therefore, strengthening our friends must be a central component of our foreign policy in both the economic and security dimensions. There is always the temptation to cut corners here and there in the aid budget; it is unwise to give in to this temptation -- it is penny wise and pound foolish.

strengthening our friends is generally an effective way to avoid major problems down the road -- problems that could end up costing us much more in resources and sacrifice.

I. Overview of 1985 Budget and 1984 Supplemental

Funding for the conduct of international relations is centered in Function 150. Outlays for FY 1985 are estimated to be \$17.2 billion. Too often this Function is viewed simply as foreign aid. In fact, in FY 1985, only 68 percent of the outlays relate to bilateral and multilateral aid. The remainder funds operation of the Department of State (which provides the necessary personnel and support infrastructure to meet vital foreign policy requirements), USIA, our assessed contributions to the UN systems, operations of the international radios (RFE/RL), and the Export Import Bank. Cuts against Function 150 directly and unmistakably imperil our ability to conduct the nation's foreign policy.

Several major new initiatives are included in Function 150 this year. These include additional funding for the Department of State, particularly to strengthen our reporting and analytical capabilities, enhance security and modernize communications, security, funds to increase transmissions by VOA and Radio Free Europe/Radio Liberty, additional funding for Central America, as recommended by the National Bipartisan Commission on Central America, on which several of you served, and our request that the entire Foreign Military Sales credit program be placed on-budget.

Looking first at economic assistance, we are requesting \$15.8 billion of which \$14.3 billion is for bilateral aid and \$1.5 billion for multilateral aid. Economic funding for Central America rises more than the two-fold from the levels approved in the FY 1984 Continuing Resolution. Much of this is in ESF, which provides both balance of payments support and assistance to promote the human and capital infrastructure needed to restore economic growth in the region. Worldwide, we will focus on increasing food production and reducing hunger; improving health, especially reducing infant and child mortality; slowing population growth, spreading education and literacy, and improving host-country financial structures. Chart B shows how our economic assistance will be distributed geographically in FY 1985.

Outlays for military assistance rise nearly \$1.5 billion. However, overall (on and off-budget) military assistance increases just over 1 percent (\$81.6 million) compared with the CR level, and it actually declines by \$177 million if our FY 1984 supplemental requests are included.

Our decision to bring FMS on-budget enables us to tailor interests rates on military assistance loans to the needs of poor or debt-burdened countries.

Over the past decade military assistance has increasingly been provided as "off-budget" loans with interest rates at cost of money to the Treasury. As a result, the Carlucci Commission reports that the 21 countries receiving substantial military and economic assistance in 1982 were charged an effective interest rate -- including both grants and loans -- of approximately 9 percent for military assistance and 1 percent for economic assistance. This discrepancy has meant that in some countries military assistance repayments have become or threaten to become a large fraction of total debt service. For others, repayment of military assistance loans takes up foreign exchange needed for economic growth.

In response, we have moved all military assistance "on budget" --a step which Congress has long urged. By so doing, we are able to provide military assistance loans either at a concessional rate or at cost of money to the Treasury depending on conditions in specific countries. This decision is a key step toward more effective management and integration of our military and economic assistance programs.

For FY 1984, we are seeking supplemental funds of \$1.1 billion dollars, including \$400 million for emergency economic assistance to Central America and \$259 million for military aid to the region.

II. Central America, the Caribbean, and South America

Mr. Chairman, the National Bipartisan Commission concluded its study as follows: "persuaded that Central America is both vital and vulnerable and that whatever other crises may arise to claim the nation's attention, the United States cannot afford to turn away from that threatened region. Central America's crisis is our crisis."

The Commission emphasized that the countries of Central America, our neighbors, are in mid-passage from the predominantly authoritarian societies of the past to what -- with determination and help -- can become predominantly pluralistic, democratic societies in the future. That passage is marked today by warfare, poverty, and political turmoil, which breed extremism and violence from the left and the right. It creates conditions which Cuba and the Soviet Union seek to exploit for their own strategic and political purposes.

The United States has a profound interest in helping the people of Central America move from these travails to a future of greater economic and social justice. Our interests will be served by helping alleviate economic grievances in the region. We have a vital interest in helping our friends block the Soviet Union and Cuba from consolidating a foothold in Central America.

And most basically, progress in this hemisphere means the advancement of our most basic values: democracy and the rule of law. This is the kind of world we want our children to inherit.

President Reagan earlier this month quoted Senator Henry Jackson's remark when he recommended establishment of the Bipartisan Commission: "Whatever policy options might be available to us, ignoring threats to the stability of Central America and refusing to engage ourselves in the problems of the region are not among them."

The Bipartisan Commission recommended, and we concur, that our engagement in the region should be comprehensive: a mix of developmental, political, diplomatic, and security measures. Because many of Central America's problems are rooted in poverty, our largest commitment of resources will be for economic reconstruction and revitalization.

Of the supplemental funds we are requesting for Central America in FY 1984, \$400 million -- or 61% -- are for emergency economic assistance. In addition, we are proposing a five year \$8 billion program for economic stabilization, reconstruction, and long-term development. This includes \$6 billion in direct appropriations and \$2 billion in insurance and guarantee authority.

These funds will support agricultural development, education, health services, export promotion, land reform, housing, and humanitarian relief, as well as trade credit insurance, and aid for small businesses.

We endorse the Commission's proposal to establish a Central American Development Organization (CADO) composed of representatives from the Central American countries themselves. Its independent recommendations will affect our determinations on the level and structure of our economic assistance.

We will also follow through vigorously on the Commission's conclusion that the United States must support the strengthening of democracy in the region. We are proposing aid to democratic, educational and cross-cultural institutions, as well as increased funding for scholarships, leadership training, and educational exchange.

The Commission also recognizes that, in the case of El Salvador, economic aid and support for democracy are not by themselves sufficient. It recommends significantly increased military aid for El Salvador. To see only indigenous social upheaval in that country, for example, is as short-sighted as to recognize only the role of Cuba and the Soviet Union. Our aid supports the moderate center against extremists of both the left and right.

If we give inadequate help, it is the moderates who will be the victims. In the words of the Commission Report, "the worst possible policy for El Salvador is to provide just enough aid to keep the war going, but too little to wage it successfully."

At the same time, the Commission concludes, and we agree, that without continued progress on human rights and democratic reform in El Salvador, as well as elsewhere in Central America, our policies will not succeed. We agree that U.S. military assistance should be conditioned on this progress. Salvadoran leaders have been made aware of this fact repeatedly; we are submitting periodic reports to the Congress on the human rights situation in that country. We also believe, however, that any legislation which imposes absolute and inflexible restrictions on the President's ability to protect national security interests would jeopardize our efforts to bring about lasting improvement in the observance of human rights.

Finally, there is a consensus between the Commission and the Administration on another integral part of our strategy in Central America: support for the efforts of the Contadora countries to bring peace to the region. The Contadora objectives are in Central America's interest and in ours.

Mr. Chairman, the President's program for Central America is ambitious and comprehensive -- consistent with the challenges we face. We urge your support.

I have talked at length today about Central America. But it would be wrong to ignore the same relationship between economic growth, security, and democracy elsewhere in Latin America and the Caribbean.

What we found in Grenada, for example, demonstrates how indigenous grievances can be misappropriated for strategic ends and turned against the people. Earlier this month, I had the pleasure of joining the celebration of the tenth anniversary of Grenada's independence. It was joyful -- a rebirth of freedom and economic hope. It underscored that freedom and economic progress depend on an environment of security. The enemies of democracy and development are the violent extremes of the left and right. The task of blunting these extremes requires not only stronger democracy and economic growth, but also professional security forces and a system of collective security which can protect people and the rule of law. Our security assistance -- like our economic assistance -- is vital to building a hemisphere which is self-reliant and able to fulfill the aspirations of its people. Your support for these programs serves the fundamental interests of all the citizens of this hemisphere -- in neighboring countries and in our own.

III. Africa

I turn now to Africa, which faces a much different, although perhaps equally serious, crisis.

Drought is widespread. As some Members of Congress -- most recently Senator Danforth -- have eloquently reported, starvation stalks the continent. In response, the United States has committed nearly 200,000 tons of food from our emergency Title II reserve. But we now have requests from African governments for an additional 150,000 tons, and expect requests for 130,000 more this year. We are, therefore, requesting Congress to approve an additional \$90 million in PL 480 Title II for Africa for FY 84. When people are dying, common decency compels us to respond.

Drought may be the immediate cause of the food crisis, but Africa's difficulties have deeper origins. Food production per capita has fallen by over 20 percent since the 1960's. Over the past decade, the national product of 15 African countries declined. For much of Africa, export earnings are down, import prices are up; excessive debt burdens many African countries.

There are many reasons for Africa's economic problems, but a primary cause lies in Africa itself. Briefly put, many African countries have followed policies which don't produce growth.

Pervasive state controls, bloated state enterprises and bureaucracies, over-valued currencies, and disincentives for agriculture have all had the effect of stifling the private sector and individual initiative.

The requisites for economic growth in Africa are many. But Africa needs to replace policies that won't work with those that will. There is increasing recognition of this fact in Africa and a number of countries are undertaking policy reforms.

To encourage this process, the President is proposing, beginning in Fiscal 1985, an Economic Policy Initiative for Africa. This effort has three components:

-- First, we are proposing a five-year, \$500 million program, beginning with \$75 million for 1985, as a new program specifically to assist African countries establish and implement growth-oriented economic policies. We will give particular attention to reforms which increase food production.

-- Second, we are working with other donors -- particularly the World Bank -- to coordinate donor aid efforts better and provide more unified support for policy reform in Africa.

-- Third, we will continue to direct our ongoing development assistance to helping build the skills and institutions needed to carry out better policies effectively.

Continued economic crisis in Africa can generate or amplify security problems. Libya continues its efforts to subvert governments and install puppet regimes in Chad and elsewhere. There are the continuing conflicts in southern Africa which we and our allies are seeking to resolve through negotiations.

However, unlike Central America, the security problems in Africa to date require only modest military assistance from the United States. The prime need there is to reinvigorate economic growth. There is no reason to despair about the future. Several African countries have made progress. With more effective policies and continued investment by Africans, the United States, and other donors, Africa can resume the progress which marked its first years of independence.

IV. The Middle East and Surrounding Regions; Southern Europe

We now turn our attention toward an area where security has become the predominant concern. A line on the map from Spain and Portugal in the West to Pakistan in the East passes through or near: the straits of Gibraltar, the Mediterranean, Libya, the Suez Canal and Egypt, the state of Israel, the Persian Gulf oil fields, and the southwestern border of the Soviet Union.

There is no area so pregnant with threats to peace -- not just regional peace, but world peace. Peace is not yet achieved between Israel and all its neighbors; Iran and Iraq remain at war; the Soviet Union is occupying Afghanistan.

About half of our total FY 1985 foreign assistance request is directed to promoting our national interests in this area -- interests which also can profoundly affect Western Europe, Japan and the rest of the free world.

Our highest priority continues to be a just and lasting peace in the Middle East. Israel and Egypt, at peace now for almost five years, have thus far been our principal partners. Our programs with these two states have three aims: nourishing the economic growth which underpins their security; sustaining the military forces they need for defense; and in the process, providing the confidence and security they need to continue their support for the peace process.

We have made significant changes in the military assistance programs for Israel and Egypt this year. To reduce the debt service burden associated with heavy defense requirements, we are recommending that all military assistance to these two countries be grants, not loans. Because grants are more valuable than loans and because of the cash flow requirements of these programs, we have reduced our military assistance requests for both countries below the levels made available in recent years.

We have discussed these proposals thoroughly with Israel and Egypt and there is general agreement that these levels and terms support our mutual goals.

In Lebanon, as the President said, the bloodshed we have witnessed has demonstrated the length to which the forces of violence and intimidation are prepared to go to prevent a peaceful reconciliation.

The measures the President has outlined reorient U.S. political and military resources in Lebanon to strengthen our ability and sustain our efforts. The United States will remain fully engaged. We will continue our efforts to bring all sides to the bargaining table. We will continue to press the Lebanese government and the opposition alike to move toward political accommodation.

Consistent with our policy, we will focus on ways to strengthen the government's armed forces as a key element in a stable Lebanon. The funds we have requested in the current budget are part of that continuing program.

Our program for the Middle East focusses also on Jordan, whose role will be crucial in taking the next major step toward peace. Most of the funds we propose for Jordan in FY 1985 will go for military assistance to help that country meet its defense needs. The Kingdom of Jordan is a moderate Arab government that has long been a friend of the United States. It now faces a severe challenge from Syria and other radical forces, precisely because of its constructive policies.

The oil producing states in Southwest Asia are vulnerable to outside threats and internal subversion by externally supported elements. Nearby in Africa, Sudan and Somalia face also the threats of instability which arise from poverty and ethnic grievances. Our programs in these areas seek to reduce these pressures and instabilities. At the same time, we are supporting countries that provide access to the facilities which our forces would need in order to operate in the area should that ever be necessary.

There is no disputing the importance of Persian Gulf oil to Western economic and strategic interests. The best way to protect these interests is to work with countries in the region to help them build their economies and to support their efforts to provide for their own security.

Our NATO allies, Turkey, Greece, Spain, and Portugal, provide a shield both for the Mediterranean and the southern flank of Europe, as well as a bridge to the Middle East and Southwest Asia. U.S. security assistance is essential if these countries are to meet their Alliance responsibilities.

We propose in 1985 about \$1.8 billion to support on-going military modernization programs in Turkey, Spain, Portugal, and Greece. Greece, Turkey and Portugal lag behind other NATO countries in military strength and urgently need modernization. These countries all offer U.S. access to important facilities. There has been encouraging progress in Turkey which occupies a strategic position. The infusions of aid from the United States and Europe in the past few years have helped Turkey recover from its near bankruptcy in the late 1970s. The Ozal government has announced reforms to encourage market forces and increase exports. These should further enhance Turkey's prospects. Our interest lies in continuing to support Turkey's growth, and we propose \$175 million in ESF for FY 1985. We signed a new base agreement with Greece in 1985 providing for continued U.S. use of the important facilities in that country. Security assistance is an integral part of our defense cooperation in Greece.

Our principal objectives in the security assistance program for Portugal are to support the continuing consolidation of its democratic institutions, to help Portugal modernize its military, and to assist Portugal as it confronts continuing economic problems. U.S. rights to use critical Portuguese facilities in the Azores were extended in December 1983. The Azores base is pivotal if the U.S. is to react effectively to military challenges in Europe or to threats to Western security outside the NATO area. Spain, a NATO ally since 1982, provides the United States access to vital air and naval facilities which will be crucial in the event of a European conflict. By contributing to Spanish military modernization, U.S. assistance strengthens the common defense and encourages an institutional role for the Spanish military similar to that of the military in other Western democracies.

VI. Asia

The pictures I have been painting in this rapid tour around the globe brighten when we turn to Asia.

Despite skyrocketing oil prices and the weak economic performance of the industrialized countries this past decade, the economies of non-communist Southeast Asia continued to display remarkable vitality. Thailand, the Philippines, and Indonesia all experienced annual growth rates in the 6-7 percent range during the 1970s.

For some 20 years, the East Asian countries have sustained higher growth rates than any other part of the world.

South Asia, where the majority of the world's poor live, has also seen reasonable improvements, particularly in agricultural production.

There are some dark spots. In recent years, the Philippines has increased its external debt and growth has lagged. Sri Lanka suffered a setback in 1983 following communal violence. But, assuming continued inflows of capital, sound policies, and a good "pull" from restored economic health in the West, economic growth will continue in Asia.

And what do we learn from this record of progress? We learn that growth improves well-being for those at the low end of the income distribution spectrum. For instance, according to a World Bank estimate, absolute poverty in Thailand has dropped from 57 percent in the early 1960's to 30 percent in the mid-1970's. Moreover, available evidence suggests that where economic growth is rapid, the lowest 40 percent of income earners have moderately increased their share of total income over time.

The Asian experience provides lessons for countries in Africa and other parts of the world. We have found the benefits to lower-income groups from growth to be greatest where the following conditions obtain: (1) growth is broadly based and agricultural prices favor producers rather than consumers; (2) productive investment is labor-intensive; (3) government interference in markets and prices is minimized; and (4) population growth rates are low and educational attainment levels are better than average.

And we have also learned how rapid growth in Third World countries benefits us both as producers and consumers. The East Asian countries now account for about one-sixth of world trade. U.S. investment in the region now exceeds \$26 billion and is growing.

The population of Asia (even excluding China) exceeds that of Africa, the Near East and Latin America combined. Continued growth there will be an enormous contribution to world prosperity and stability. Our development aid programs in Asia are concentrated in South Asia and Indonesia. They emphasize technical assistance in fields such as agriculture research. Whether we speak of this aid as simply an investment in the future or more pointedly as an investment in an immense future market, we will reap great returns from continuing to assist growth in the region.

Precisely because the stakes are so high both in economic and strategic terms, and because serious threats remain, we continue to provide military assistance in the region. Our aid to Thailand and Korea deters direct military threats to these countries from, respectively, Vietnam, which now has the world's third largest standing army, and North Korea, which spends over 20% of its GNP on its military. In addition, the Soviet Union has greatly increased its military presence in the region. Our assistance to the Philippines helps maintain the U.S. bases there which undergird our strategic position in the Pacific and Indian Oceans. Our relationship with ASEAN is an important pillar of stability in Southeast Asia.

VII. The Multilateral Development Banks (MDBs)

In FY 1983, lending by the World Bank and its regional counterparts totaled \$20.4 billion, up from \$16.8 billion in FY 82. That this lending program was sustained with a paid-in contribution from the United States of \$1.5 billion testifies to the advantages of using the multilateral development banks to share the burden of providing aid. These institutions are also leaders in providing advice on sound market-oriented economic policies.

We consider our participation in the multilateral development banks a crucial part of our assistance policy.

I want to stress in particular the important role played by the International Development Association in promoting development in the poorest countries. We have just completed negotiations for the seventh replenishment of IDA's resources. In our judgment, this replenishment provides a basis for a strong IDA program in Sub-Saharan Africa to work in conjunction with our Africa initiative. We are requesting the final \$150 million for IDA VI in our FY 1984 supplemental proposal and \$750 million for IDA VII in our FY 1985 budget proposal. Our pledge to IDA VII has been widely discussed in the Congress and should enjoy broad support here.

VIII. Conclusion

Mr. Chairman, you and the other members of the Carlucci Commission concluded that the foreign aid program is vital to our national interests. I have tried to show why this is so region by region.

You also recommended improvements in the program, particularly more effective integration of military and economic assistance and development of means to speak to the Congress about the program as a whole rather than its individual parts. I have reviewed all your recommendations and have asked for immediate follow-up on most. Many were already on this Administration's agenda of improvements.

I did not agree with the Commission's recommendation for a new Mutual Development and Security Administration because I felt that the Commission's main aims -- better integration of our assistance programs and a more unified voice in representing these programs to the Congress -- could be achieved within our existing structure and without the disruptions of a major reorganization. I have asked the appropriate offices to prepare a plan for doing this by early March.

The Carlucci Commission produced a bipartisan consensus as to the value of our foreign assistance program. We will do our part to improve the program as recommended. We hope Congress will respond in kind by supporting and passing the budget requests which we have made.

CHART A

U.S. Foreign Economic Assistance and Military Assistance In Current and Constant Dollars FY 1974 — FY 1985

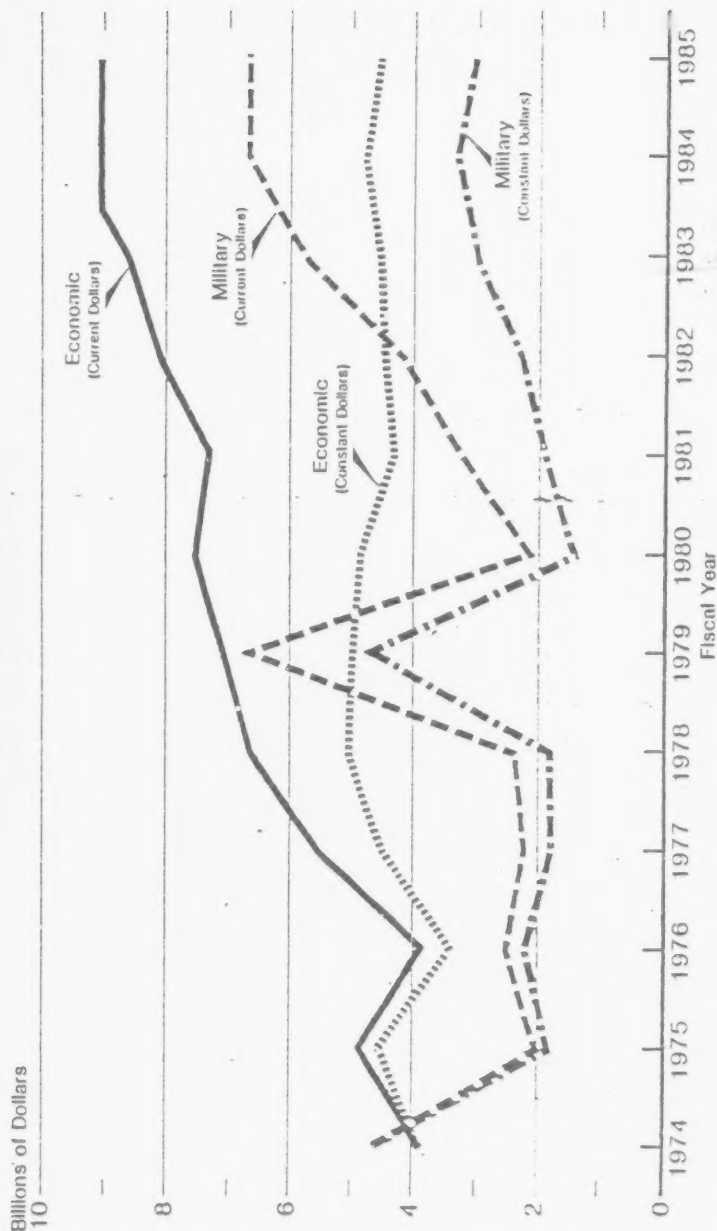


CHART B

A.I.D. Economic Assistance By Region FY 1985

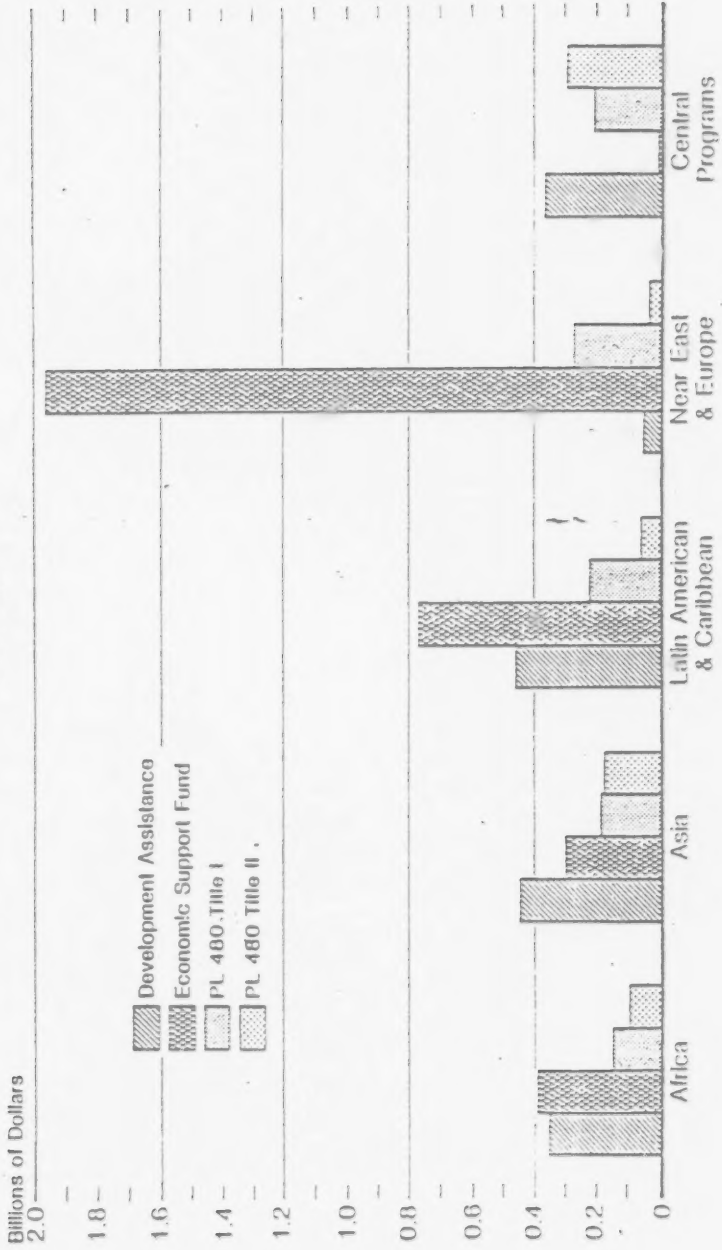
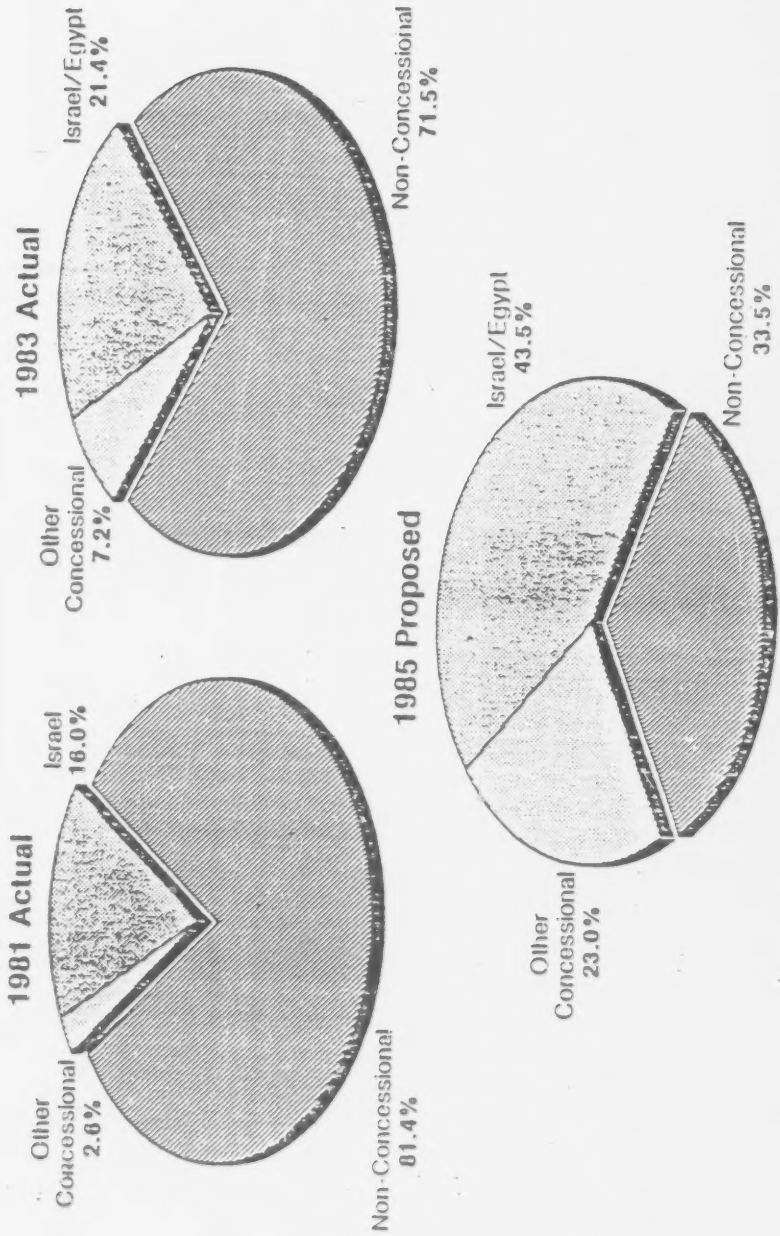


CHART C

Military Assistance Concessionality



Chairman DOMENICI. I am going to yield my time and reclaim it later. Senator Symms has asked if he could be recognized now because of an emergency, so I will give him mine and catch my turn later.

CENTRAL AMERICAN AID SUPPORTING CORRUPTION EXAGGERATED

Senator SYMMS. Thank you very much, Mr. Chairman.

Thank you, Mr. Secretary, for being with us today. I have a few specific questions and a few general questions that I think might be helpful for some of us who have consternation about voting for foreign aid in general, but in particular when we get reports like the General Accounting Office report and hear other qualified economists talk about aid into Central America, stating that there is somewhere between 20 and 50 percent of it that supports corruption. Would you care to comment on that, or is this highly exaggerated? What are your comments, and what is the Department's position on that?

Secretary SHULTZ. Well, let me make a comment, and then I would ask AID Director McPherson to comment, as well.

The reports in terms of those percentages that you gave are highly exaggerated. It is certainly the case that in any spending program, even in the United States, not everything is perfect, but on the whole, the money is spent well; it is administered carefully; we constantly review it. Most the things that have gotten some publicity have resulted from our own internal audits and our efforts to strengthen the administration of the funds, and then that is reported, of course—and I am not complaining about that—but it is just that these problems are ones we have discovered and are doing something about. They do not amount to anything like the kind of percentage problem that you quoted people as saying.

Senator SYMMS. Right. They are allegations, I think, largely, rather than—I have not had firm facts on those figures, but it was on the television news, I think, just as recently as yesterday, when I saw an advocate and a detractor talking about the corruption of foreign aid to Central America, and it does make one wonder.

Do you feel that you are making extra efforts to tighten up that aid?

Secretary SHULTZ. The AID Administrator is here, and he wants to speak for himself, but there are regular Inspector General efforts to monitor what is taking place, to find things that are wrong, and to make suggestions for how they can be corrected. Beyond that, of course, the GAO makes audits. We do know what our Inspector Generals have found and what we are doing to correct those problems.

Unless I am incorrect, Peter, I do not think we have seen a written report on the GAO as yet. These are statements that float around. We have seen nothing in writing as yet, and it is a peculiar practice.

I have been involved with audits myself, in some of the best-run companies in the United States, and I promoted them and developed not only the outside auditing function, but the internal auditing function. I have never yet seen an audit that did not find some-

thing wrong in the best of organizations. There is always something wrong.

Now, there can be massive things wrong, and that is different. But my impression from what I have seen of these reports is that the kinds of numbers that you quoted are not correct.

Peter, perhaps you could make a comment.

Mr. MCPHERSON. Yes, Senator, if I might. There has been no one who on paper has alleged 20 to 50 percent. Those really have just been casual comments. And I think frankly, of those close to the situation—and I know you are not suggesting that—but frankly, those just are not serious figures.

Senator SYMMS. What would be serious—15 percent?

Mr. MCPHERSON. No; I frankly do not think that. I think really, a very small percentage. Each one of these audits—

Secretary SHULTZ. He wants to get a number out of you. Pick a number between one and two. [Laughter.]

Mr. MCPHERSON. It is my experience, Senator, always to go with the Secretary, so between one and two.

A point that is very important here, Senator, is that in each one of these audits, except for the GAO audit, it was our request to have them made.

EL SALVADOR LAND REFORM PROGRAM

Senator SYMMS. OK, thank you. My time is about up, and I want to get one other question in at least. I have got about a half dozen here that I would like to ask. But one of the things that has been of a great deal of concern to me is the land reform in El Salvador. A fee-simple title is not given to the farmers. These farmers get into a co-op, and it is my understanding that they cannot sell their rights once they are chosen into a co-op, which is run by the Government-appointed director. It appears to me that what we are doing then is just supporting collectivization of those farms down there. And I have trouble in my own mind with why U.S. aid would be promoting socialism, so to speak, instead of private ownership and capitalism.

Is there any place in the world where we promote capitalism and private ownership with our aid dollars? Maybe that would help me a little bit. And then, if you could specifically comment on El Salvador.

Secretary SHULTZ. Well, we try to promote that with our assistance everywhere. In the case of the land reform program, there are three phases to it. You are referring to the phase that dealt with large land-holdings and sought to put them into cooperatives, and in that case, what has been created is a cooperative as distinct from an individual land holding. And I suppose that is based on the notion that if you have a large tract, you are going to be more efficient in farming it, rather than breaking it up into individual plots.

Senator SYMMS. But even in the land of the tiller program, the farmer does not get a fee simple to the land, does he? I understand they have to hold it for 30 years before they get the title, and most of them would be dead before that, so it reverts to the Government.

Mr. MCPHERSON. It is correct, Senator, that the land reform program initiated by the Government of El Salvador in 1979 under

phase III, Land of the Tiller, does not give the farmer a title until he or she has held it for some 20 or 30 years. That has been part of the program which has concerned some, and indeed, I personally have reviewed that aspect of the program with the President of El Salvador. I think that and a number of other aspects of the land reform program in months and years ahead will be reviewed. But it does have a disadvantage which you are suggesting, that a farmer cannot obtain credit to modernize and improve his land if he does not have title to it.

I think that the land reform program in El Salvador has made a marked change in that country, with 20 percent of the land involved, et cetera, but the fact is there are some improvements and strengthening of that program that need to be undertaken, and you are suggesting one of the things that is under review.

Senator SYMMS. I think my time is up.

Thank you, Mr. Chairman

Chairman DOMENICI. Senator, if you have to leave, you might leave some of those; if you want us to ask them, we will be glad to get them in before we leave.

Senator SYMMS. OK, and I would ask unanimous consent to submit some of these questions for the record if they do not get asked.¹

Chairman DOMENICI. There is no objection to that. Anyone can do that.

Now we are going to go to Senator Metzenbaum. Senator Chiles, we will follow on your side the arrival time, so I have Metzenbaum, Sasser, Exon, Riegle, Johnston, Chiles.

Senator Metzenbaum?

NEED FOR MILITARY ASSISTANCE AS COMPONENT TO ECONOMIC GROWTH

Senator METZENBAUM. Mr. Secretary, on page 8 of your statement,² you make a statement—and I agree with it—that, “Because many of Central America’s problems are rooted in poverty, our largest commitment of resources will be for economic reconstruction and revitalization.” I agree; that is what it ought to be. But when I look at the figures for fiscal year 1984, including your supplemental request, it would appear that the opposite is occurring as far as the program is concerned, because we seem to be shifting from economic to military aid, particularly in El Salvador.

In fiscal year 1980, there was \$10 of economic aid for every \$1 of military aid. In fiscal year 1984, \$1.37 of economic aid for every \$1.00 of military aid.

My question is how do you explain that fact in view of your own statement that we ought to be doing more in the area of economic aid if we are to help the nations of Central and South America?

Secretary SHULTZ. I think that adequate security is an absolutely necessary condition for economic progress. If you do not have it, you cannot get anywhere. It is a necessary condition. It is not a sufficient condition. There must be other things. But it is absolutely necessary.

¹ See p. 223.

² See p. 168.

Now, in the period of time that you spoke about, say, the last 4 years, I think that the military threat of the guerrillas in El Salvador has increased, and certainly, the supplies that have gone to them have increased quite substantially. And so, in order to provide what our late, esteemed friend, Scoop Jackson, used to call a security shield, we have to step up to that, and we have to step up to it in two ways, I think. One is to provide enough resources in a gross overall sense; and the second is to provide it in a manner where those who are using it can sense some continuity of support. If they have to administer their security system, wondering whether at the end of 3 months, they are going to run out of resources, then that causes them to rearrange their situation very differently than if they think they can mount a sustained effort at a given level and really keep going with it.

So I think that there has become a need for military assistance as a necessary component to economic growth. You know very well yourself that if you are considering a place that you are going to invest your funds, the last place in the world you put them is a place that is subject to security threat. So naturally, the security side of this has risen. So has the economic side. Unfortunately, much of the economic assistance that is needed is to get you back to sort of the zero point, you might say, because of the large-scale destruction of economic infrastructure that has impoverished those countries. And, in the Kissinger report, the Bipartisan Commission report, I think these large sums—which are staggering, in a sense—are nevertheless the sums they estimate that would bring the economic capacity of those countries back up to where it was in the 1979-80 period.

MILITARY ASSISTANCE LIMITS

Senator METZENBAUM. In your opinion, Mr. Secretary, what are the limits to that military assistance? How far do we go before we really start to try to get our program across and get the people of the country to understand their relationship with us rather than just doing it by arms? Is there any limit; if so much military aid does not do the job, we just give more and more, or do we stop at some point—because this Nation, both through Democratic and Republican administrations over the years, has tried to sort of buy this kind of relationship with other countries, with military aid, and we have gotten in bed with some of the great dictators of the world. How far do we go in this program?

Secretary SHULTZ. Well, first of all, I think it is important that we recognize that what we are dealing with is a comprehensive program. We are trying to help them to bring about political reform in their society. We are trying to help them develop the institutions that will give them economic development. We are trying to help them and others in the region develop a regional solution to the security problem, and in the meantime, we are trying to help them put a security shield in front of themselves. All of these things together represent what we need. And the Bipartisan Commission was an effort by the President to say, "Well, all right, I have been arguing about this with the Congress now for a couple of years or more, and let us get some people whose views"—goodness

knows, they had different views when they started, very different views, and people who are from both sides of the aisle, and let them go to work on this. And they really did, and I am sure all of you know, because you know people who were on that Commission, the Commissioners worked personally at that job. They did not just hand it to a staff group. And what they came out with is basically what the President has responded to and said, "All right, if that is their estimate of what it takes, it coincides fairly much with ours, as we have examined it, and we will support it."

Senator METZENBAUM. Well, my time has expired, but I am not sure that I ever got an answer to my question, but I appreciate your response.

Thank you, Mr. Chairman.

Chairman DOMENICI. Mr. Secretary, I am going to take my 5 minutes now. Although I have given an opening statement, I have not asked you any questions.

Secretary SHULTZ. I liked it better when you were making an opening statement, Mr. Chairman.

NO MILITARY AID FOR EL SALVADOR IF THEY COULD NOT WIN

Chairman DOMENICI. Oh, you will not be too unhappy. These fellows over here on my right say I am the coach for most of you but I will make it a little bit difficult.

On the first point, the point that the Senator raised, let me see if I could answer it this way. Did not the Commission unanimously find with reference to military aid, that if we could not provide enough for El Salvador to win, we ought not to give them any at all. Is that correct?

Secretary SHULTZ. That is what they said, and I quoted a statement in my statement here.

Chairman DOMENICI. I think you quoted it verbatim. In addition, the Commission also said that El Salvador ought to make some significant reforms, and they itemized those. They enumerated five or six things that America stands for rather boldly. We would not want to be helping countries that do not have such things as a basic judicial system, a prosecutorial system, some basic human rights. In Central America, the government must go after death squad people and try them, put them in jail, and do what decent people do. Those items are all centered on the other side of that ledger on our relations. Is that correct?

Secretary SHULTZ. Yes, sir, and they have been part of the President's program right along, and considerable progress has been made, and we look for continuing progress. There has been a lot of no-holds-barred type of discussions. The Vice President recently, last December, did an absolutely outstanding job of really putting it across. And I think whatever arguments we may have about the form of certification or something like that, that there is no argument in this country about the fact that there just has to be a decent respect for the rule of law in El Salvador, or our ability to support them will wither away. We all know that.

EL SALVADOR IN NO POSITION TO DEFEND THEMSELVES

Chairman DOMENICI. Mr. Secretary, with reference to that point, I take it, then, that whatever the limit is with reference to military assistance for El Salvador, it is the administration's position that they are still not in a position to defend themselves adequately yet; is that correct?

Secretary SHULTZ. That is correct, that they need this additional assistance.

ASSESSMENT OF WHAT HAPPENED IN LEBANON

Chairman DOMENICI. Now, Mr. Secretary, the President's budget asks for substantial increases in foreign assistance, in particular predicated upon this package for Central America, some Middle East budgetary changes, and a few other items. I think it is fair to say that, as in most things, members of the Senate on this committee, when it comes time to vote for a package, might very well be affected overall by what is going on or not going on in the Middle East.

Could you tell us quickly here what is going on in Lebanon? Give your assessment of what happened, as briefly and succinctly as you can, please.

Secretary SHULTZ. Well, it is a long story, and I do not know where you want me to start.

Chairman DOMENICI. Well, we will have two more lights on our timer before my time expires. It will be a couple of minutes, but you can continue to respond longer than that.

Go ahead.

Secretary SHULTZ. I think we have to start recognizing that Lebanon is a troubled land and has been for a long time, especially so in the last 10 years, with the PLO there, creating a state within a state, and with a great amount of violence and turmoil between the Lebanese themselves and the PLO. You had a situation of great tension. Syria's presence was massive, all the way through the country, in Beirut, and it did not seem to be helpful in bringing stability.

PLO TIED TO SOVIETS

Whatever opinion you may hold about the advisability of Israel's move into Lebanon, the administration opposed that move, but anyway, whatever your opinion may be about that, the fact is that after the PLO had left Beirut and had been cleansed, to a certain extent, from most of the country, on the one hand, gigantic quantities of arms were found, and all sorts of records were found, that tied the PLO to the Soviet Union, so you could sort of see what people had in mind there. But it also seemed as though there was an opportunity for something different, and conceivably, a sovereign and unified Lebanon might be brought out of this chaos. And, although it was clearly something that would be difficult, nevertheless quite important, and if it could be achieved, it would add a great measure of stability in the Middle East, something that we have worked for.

The Syrians at that time had been badly beaten, and when they were talked to about withdrawal from Lebanon, basically, said, "We will withdraw as Israel withdraws." They told me that, they told the Lebanese that, they told many other governments that.

ISRAEL AGREES TO TOTAL WITHDRAWAL

So that left a question of negotiating a sensible withdrawal formula for Israel. It took a long time. I wish it could have been done faster. But at any rate, it was a matter of great importance, obviously, to Israel and to Lebanon, so it was a painstaking negotiation. The outcome was an agreement between Israel and Lebanon that provided for total withdrawal of Israel from Lebanon, and it also opened the possibility out in the future, particularly, of some sort of more normal relationship between Lebanon and Israel, so that a second Arab country would have a relationship with Israel.

Now, people say that agreement is a great stumbling block to peace in the Middle East. Certainly, it is an agreement that Syria does not like. They do not like it, not because of anything about its terms—although they might argue with some of its terms—they do not like it because it is an agreement between Israel and an Arab government.

Now, I open the newspapers every day, and I am attacked as something wrong with me for supporting that agreement. Frankly, I am proud of that agreement, because what is wrong with reasonable security and total withdrawal for Israel and the prospect of a reasonable relationship with another country? I thought that was what we were for.

So I do not have any problem in saying that I favor that agreement. Of course, as the President has said, it is not our agreement. It belongs to Israel and Lebanon, and if those countries wish to make a change in it or do anything with it, that is up to them; it is not up to us. It is basically, I think, a good document.

At any rate, with the development of that document, our diplomacy basically was with the Arab government. You have said it is very important for Israel to withdraw, and you want to see an agreement to withdraw. We have got one. Here is the key. You want Israel to withdraw. We will give you the key. All you have to do is put it in that lock, labeled "Syria" and get them to withdraw, and you will have accomplished your purpose.

Now, I think that was a very good approach. However, not long after the agreement, Israel decided, for perfectly good reasons—I am not faulting them for making this decision—but they decided to redeploy their forces, and there emerged in Israel a very strong sentiment, very prominently expressed, that Israel should get out of Lebanon. And of course, Syria, then, was able to go to the countries that we were also going to and say, "Israel is going to have to get out of Lebanon. They are leaving. We can force them out of Lebanon."

Now, I think they are going to turn out to be mistaken, but at any rate, that changed the structure of our diplomacy, and with the areas that Israel left, the Allayh and Shufe areas, becoming battlegrounds, and areas through which very large scale infiltra-

tion of Palestinians and Iranian terrorists into Beirut occurred, obviously, the structure of the situation changed drastically.

PEACE-KEEPING ROLE FOR MARINES

Our marines went there by invitation to help bring about stability. And we found ourselves caught up in this pattern of violence. They were never there intending to be an offensive military force or to, in any sense, try to dominate Lebanon by military means. Quite to the contrary, their role was to be a peace-keeping role.

In recent weeks, it became very clear that the situation being confronted, particularly around Beirut where they were, had changed, and the principal concern we had to have was a concern about terrorism, as well as building up the Lebanese Armed Force, which was done quite successfully. The President felt that moving the marines offshore and raising up the antiterrorism level of training, and at the same time protecting our forces strongly with our naval assets was a better deployment of our forces, and he, after consultation with the key governments involved, Lebanon and the MNF (Multi-National Force) partners, announced a decision. That decision is in the process of unfolding itself. However, I would have to say at the same time that the situation in Lebanon has deteriorated, from our standpoint. So what is happening right now is not anything resembling what we wanted to have happen. We wanted to see a unified, stable, and sovereign Lebanon, and what is happening is right now much more violence and much more division, and a strong measure of Syrian domination.

Some of the things that Syria is now demanding in Lebanon make an absolute mockery of Syria's concern that anything in the Lebanon/Israeli agreement infringed on Lebanon's sovereignty. It is quite clear they care very little for Lebanon's sovereignty. But they do care a great deal to prevent, if they can, a reasonable relationship between an Arab government and Israel.

So, in that struggle, we will continue. Our objectives in Lebanon have been honorable objectives, have been good objectives. The President and the Congress and the American people have stood for things that are positive, and I regret to say that we have not been able to achieve those things, but that does not mean we should not have pride, and it does not mean we should not keep trying, and we will keep trying, with a different structure of our assets and our diplomacy, not only with Lebanon, but in the Middle East more generally, which is a place of tremendous significance, and where there is a tremendous amount of volatility.

Chairman DOMENICI. Thank you, Mr. Secretary.

Senator Sasser?

ADMINISTRATION APPROVES SUBSTANTIAL MILITARY BUILDUP IN HONDURAS

Senator SASSER. Thank you, Mr. Chairman.

Mr. Secretary, let me shift gears to another area of the world where we appear to be increasing, perhaps, our military involvement.

There is great concern about the U.S. policies in Central America. I recently visited Honduras, and I returned with the view that

the administration is following a policy in that region that seems to emphasize military solutions. The Big Pine military exercises, for example, have been used as a screen to build a very substantial U.S. military infrastructure in the country of Honduras.

For example, the Congress has approved two airfields for construction projects there, but the Pentagon has built or improved another four airfields, and at least two or three more airfields will be built in conjunction with military exercises beginning in May in Honduras. And I see in the fiscal year 1985 budget request that DOD seeks approval to preposition ammunition; the U.S. Army, down near the Nicaraguan border; they are requesting funds to build an ordnance storage facility for the U.S. Air Force in which to store rockets and iron aerial bombs, so clearly, we are establishing a military infrastructure in the country of Honduras which could support a substantial conventional war in that region.

Now, I discussed this with our Ambassador in Honduras, Mr. Negroponte, and he told me that the threat of an invasion from Nicaragua was very slight and really not expected. He said, and many others said, that a greater threat was one of insurgency or subversion.

Now, Mr. Secretary, you do not deal with an insurgency threat by building airfields and base camps and prepositioning ordnance for fighter aircraft. This question has come up before in the Congress, and Secretary Weinberger recently tried to downplay the significance of the military infrastructure in Honduras. He told another committee that the airstrips that U.S. combat engineers have built, and I quote him, "are simply pieces of real estate where the dirt has been padded down a bit," closed quote. Well, I walked one of those airfields. It is 8,000 feet long; a very significant construction project that will stand for several years with minimal maintenance.

Now, my view is that these facilities appear to be far in excess of what would be needed for successful completion of military exercises in that region. So my question, Mr. Secretary, is why has the administration approved a substantial military buildup in Honduras, and what are the plans of the administration for U.S. military involvement in the country of Honduras?

BUILDUP IN NICARAGUA CONSTITUTES MILITARY THREAT

Secretary SHULTZ. First of all, the military construction is related to the training exercises in Honduras, which are envisaged to continue periodically from time to time, and those are exercises that have taken place on a reasonably substantial scale, so that facilities are needed to conduct them.

Second of all, there is in Nicaragua a very substantial buildup of forces, far beyond anything needed by Nicaragua to maintain its own internal security or for any kind of defensive needs. It is a very large buildup, and I suppose is akin to the sort of thing that we found when we opened the warehouses in Grenada, and we found equipment that looked like it would support forces on the order of close to 100,000.

So, what is going on there represents a considerable threat to the region, and I would be very much surprised if in your travels to the

region, people did not tell you that they felt Nicaragua was a very considerable threat to the stability in the Central American area.

So, I do believe that Nicaragua does constitute a definite military threat, and we seek to support our friends down there, including Honduras, a country which has attained a sense of democracy and wants to keep it going. So that is what we are about.

There is no plan for the direct American military involvement in any military actions so far as Nicaragua is concerned.

PLACING U.S. MILITARY PEOPLE TOO CLOSE TO UNSTABLE BORDERS

Senator SASSER. Well, Mr. Secretary, the next set of exercises, which begin in May, as you know, and are called Grenadiero I, will be conducted at two sites, where two new airfields will be built by American combat engineers. And one site is only a few miles from guerrilla-held territory in El Salvador. The other site is only a few miles from an area of substantial military instability, to put it politely, in Nicaragua.

Now, I know the Department of State does not plan or execute military exercises. But as a member of the National Security Council, you, of course, can review the purpose and extent of U.S.-sponsored war games. So my question is this: If we are not going to get involved militarily in Honduras, why is it necessary to hold exercises so close to the areas of instability? We have already witnessed one incident where a U.S. helicopter pilot was killed when his helicopter ventured too close to the Nicaraguan border, or even over it; we saw 2 weeks ago where seven American servicemen were killed in a helicopter in Honduras, operating in bad weather.

My question is aren't we running a substantial risk by putting American military forces right down on those borders, and having a substantial presence there, that things are going to get out of control, and we are placing U.S. military people too close to unstable borders. Why can't the Hondurans handle that situation?

CONDUCT TRAINING NEAR REALISTIC CONDITIONS

Secretary SHULTZ. Well, I think insofar as handling the instability in Honduras, that is up to the Hondurans to handle, and insofar as the insurgency areas in El Salvador, it is up to the El Salvador Armed Forces to handle, not us, or to handle in some conjunction with the Hondurans.

Insofar as the places where training takes place is concerned, I cannot comment knowledgeably about that, except to say that if you are going to conduct training, you want to do it under conditions that are somewhere near realistic insofar as the kind of terrain and conditions that you are going to encounter are concerned, and not do it under some idealized situation that will not resemble the reality of what you are basically training yourself for.

So I imagine that is a consideration that has gone into it.

CENTRAL AMERICAN POLICIES SHOULD BE OPENLY DISCUSSED

Senator SASSER. Well, my time is up, Mr. Chairman, and I would just conclude by saying this. I am convinced that we are preparing a very substantial military infrastructure in the country of Hondu-

ras. It appears to me we are planning for a substantial U.S. military involvement, at least internally, in that country. We are doing this with very little public dialog, very little debate, if any, here in the Congress of the United States. And I fear we may find ourselves in the same situation that we find ourselves in in Lebanon: U.S. troops there, no support for that position in the public at large, no support for it in the Congress of the United States, so we have to withdraw and pull out and gain nothing, except perhaps the loss of a lot of American lives.

I would like to see this policy openly discussed, Mr. Secretary, and I think that is something that badly needs to be done in the coming weeks and months in this Congress.

Secretary SHULTZ. Well, I certainly do think that our policies in Central America should be openly discussed. My observation is that there are very few inhibitions on anybody in discussing them. And we had presented to us here recently a report of a bipartisan commission which worked at it very hard and gave us the benefit of our views and is available to testify before this committee. As a matter of fact, I think they did testify before some committees already.

Chairman DOMENICI. Not here yet.

Secretary SHULTZ. So discussion is not one of the things we are wanting for.

Senator SASSER. Thank you.

Chairman DOMENICI. Thank you very much, Mr. Secretary.

Senator Gorton is gone.

Senator Kasten?

VIEWS ON KISSINGER COMMISSION REPORT SHARED

Senator KASTEN. Thank you, Mr. Chairman.

First of all, Mr. Secretary, I want to say that I share your view and the chairman's view on the Kissinger Commission report. I think that the Commission has been successful in developing this bipartisan, broad-based group of recommendations, and I think also that, hopefully, we have taken the two key elements of the congressional debate out of the debate. The first question is whether the cause of the problem is simply an economic problem, or whether the cause of the problem is an economic problem along with specific involvement and actions on behalf of the Soviets, the Cubans, and the Nicaraguans. And, without any dissent, the Commissioners, the broad span of the Commission, said the problem is the latter—poverty, along with active involvement by the Soviets, the Cubans, and the Nicaraguans. That is one question that we have been debating back and forth, and I think we have now got the answer.

The second question that we have been debating back and forth now for 2 or 3 years here is whether the solution to the problem is an economic solution, or the solution to the problem is a combination of economic and security assistance. Once more, without debate or dissent, the Commission said the solution to the problem is a combination of economic and security assistance.

UP-FRONT FUNDING REQUEST PREFERRED

So I am hopeful that we now will be able to go forward with the recommendations and that this will be the first test of it in this Budget Committee, that we will go through the authorizing and the appropriating process. I am concerned, though, that when the administration sent Congress the proposed legislation last Friday to implement the Kissinger Commission report, the authorization for funding these recommendations is the 5-year figure, the \$8.4 billion. The actual funding request, appropriations, is for only the 1985 portion. So the result is going to be that we are going to have the authorization in place for the total amount over the 5-year period, but we are going to have to fight the appropriations battle year after year after year. And it would seem to me it would be preferable to be up front and to do the authorization the same way as we did the appropriation and get the battle over while we have got the bipartisan support, and to go forward.

Why didn't the administration request the full \$8.4 billion up front, especially since there really would not be any additional political heat, in my opinion, and the effect on the deficit essentially is the same?

LONG-TERM AUTHORIZATION CALLED FOR

Secretary SHULTZ. Well, first of all, the Kissinger Commission report, as you pointed out, called for a comprehensive approach. It also said this is not something that will yield to some sort of quick remedy. It is a set of problems to which you have to lend a sustained effort if you are going to get anywhere, and that was the President's charge to them, in fact, to look to consider the long-term implications of the situation.

So, I think it is appropriate under the circumstances to call for a long-term authorization and to set out that idea consistent with the recommendations.

I suppose the question of what should you do by way of appropriations, you scratch your head a little bit and consider the willingness of Congress to appropriate funds over a 5-year period, and you come away wondering what your chances are of getting that kind of an appropriation.

And, I suppose in fairness, I would wonder if it is even that great an idea—that is, it is one thing to authorize and set that out and say: "Here is where we are going. We want everybody to see that." And when the Congress votes an authorization, presumably that is a good-faith vote, and people intend to follow through on it. But situations change, and so the exact composition of funds and so forth, you want to review, and so perhaps it is appropriate to have the appropriations come on a year-by-year basis, or maybe a couple of years. In effect, what is being asked for here is a supplemental for fiscal 1984 and fiscal 1985, which would carry us, let us say, for about a year and a half into this program, and it could then be evaluated.

Senator KASTEN. On the IMF appropriation, for example, you ask for a 3-year authorization, a 3-year appropriation, and there was a fight. We got the fight over, and it is done. What I am suggesting to you is that we are going to be fighting this battle over, and over,

and over, rehashing the same kinds of questions and problems. And right now, when we have got the bipartisan support that I think we have, that I think we will have in the Congress, it seems to me that we would have been better off going—

Secretary SHULTZ. Well, I will be very happy to report your view to the President and think about this. Our problem has been not so much to get 1 year's appropriation, but to get 3 months' worth, to get away from this practically every-other-month look at the thing. And if we could get the supplemental and 1 year and have that much of a go at it, I think that the results would be good enough to make people want to follow up and consolidate this. But I see your point.

Senator KASTEN. My time is up.

Thank you, Mr. Chairman.

Chairman DOMENICI. On that point, it seems to me, Senator Kasten, without having talked to you about the details, that some of that package lends itself to treatment like IMF; some, obviously, do not. It is in that context, I think, that Senator Kasten is presenting the issue.

Senator KASTEN. Right.

APPROPRIATE FUNDS FOR PERIOD NEEDED

Chairman DOMENICI. To the extent that there are program objectives that are multiyear and differ from the usual annual programs, I think the Senator is absolutely correct—why not appropriate it for the period needed? Those programs that are ordinarily annual appropriations, could not be done that way even if you asked us, unless Congress were willing to change its process which unfortunately it has not been willing to do that yet.

Senator KASTEN. What I am trying to figure out, Mr. Chairman, is whether they did not know how they would spend the money next year, and the year after, and the year after, or if they thought it was politically impossible to get a 2-, or 3-, or 5-year appropriation, as well as an authorization. I am not sure what the answer is.

Secretary SHULTZ. There was a considerable debate within the administration about what kind of a package to send up, and it seemed to us best to bundle things pretty much together, since there had been so much emphasis on the fact that this was a comprehensive approach, and we recognize that there is a certain amount of "oranges and bananas" kind of thing in there when you do it that way, as distinct from a lot of separate bills. But we decided, the President decided, it was better to go comprehensive and be consistent with the bipartisan commission report that way.

Chairman DOMENICI. Senator Exon?

VALUE OF FOREIGN AND PROGRAMS HAS DECLINED

Senator EXON. Thank you, Mr. Chairman.

Mr. Secretary, I take it in your opening statement that you think we probably are not doing enough in the whole area of foreign aid. Is that correct?

Secretary SHULTZ. Well, as a general proposition, but that does not mean that I think that is the case with every country or every part of the world. But overall, the real value of the various eco-

conomic and security assistance programs of the United States has declined rather sharply over the last 10 or 15 years, and I think that is a mistake.

TOTAL ADMINISTRATION PROPOSAL FOR FOREIGN AID

Senator EXON. Could you tell me in round figure totals of billions of dollars, how much the administration is proposing for foreign aid, military, economic loans, a total dollar figure, including programs that might not be directly under the Department of State? I am thinking of AID, and the World Bank, the IMF, Peace Corps, Refugee Assistance, Export-Import Bank, Public Law 480, which is in agriculture, the Asian Development Bank, the African Development Bank, the United Nations, Inter-American Development Bank, and so forth and so on.

Is there a total that you could give me in billions of dollars that is included in the recommended budget for 1985?

Secretary SHULTZ. Yes, sir. Within the general context you were talking about—

Senator EXON. And this is on- and off-budget, right—or is it all onbudget now?

Secretary SHULTZ. It is onbudget, with this change that we have made for fiscal 1985. The outlay effect in fiscal 1985 comes to \$17.229 billion. The authorization level is \$22.314 billion. That is the all-inclusive figure. That includes the State Department appropriations, I believe, Eximbank, all these different things.

Senator EXON. Well, if it covers all of these—you got the thrust of my question—all—

Secretary SHULTZ. All, not just things that I am responsible for administering.

Senator EXON. Everything. And BA was what, \$22—

Secretary SHULTZ. BA, \$22.3 billion—I always choke on that one—

Senator EXON. \$22, rounded out.

Secretary SHULTZ. It is still close enough to being in the private sector, that I cannot quite handle these numbers.

Senator EXON. What does that amount to for the following 4 years of the projected budget? Do you have that figure there, or can staff get that for me?

Secretary SHULTZ. I am sure we have it. I do not have it right in front of me, however. I could submit that for the record.

Senator EXON. Well, would you submit that for the record? I would like to know what that is, or they might be able to find it; \$22 in BA for 1985, and let's add 1986, 1987, 1988 and 1989, to give me a 5-year total, approximately.

[The following was subsequently supplied for the record:]

For FY 1986, the Administration estimates budget authority requirements for International Affairs (Function 150) will total \$22.341 billion; the associated outlay impact would be \$17.855 billion. For FY 1987, the estimated BA and outlay figures are \$22.362 billion and \$18.842 billion respectively; for FY 1988, \$22.386 billion and \$18.878 billion; and for FY 1989, \$21.348 billion and \$18.318 billion. The five-year total for budget authority, under these estimates would be \$110.775 billion and for outlays, \$91.385 billion. These estimates will, of course, be subject to refinement annually at the time the Administration submits its budget requests to Congress.

Secretary SHULTZ. Roughly, on 5 years, you would just multiply it more or less by 5 on BA so you are up at the \$90 billion level.

Senator EXON. In other words, it is not going to give you an increase, but it is going to level off pretty much at that level?

Secretary SHULTZ. It is scheduled to on this table, but I am not here to tell you that the world is going to remain exactly the way it is as we foresee it, because I am sure it will not.

HONDURAS ACTIVITIES NOT UNDERSTOOD

Senator EXON. Let me switch back to some of the questions that you have been asked about our activities in Honduras. I am one Member of the Senate who has not made up my mind on this. I certainly am not ready at this time to either accept or reject the two reports that you outline, but I am keenly interested in what is happening there.

I was somewhat concerned, though, when I heard you make statements like: "We seek to support our friends there," and, "No plan for direct military involvement of United States forces there." I am concerned because I think those are phrases very similar to what we were told when we first sent our troops into Lebanon.

I get the impression, Mr. Secretary—and I wish the President would speak out a little more clearly than he has on what has been going on down there. Senator Sasser has been there. Others have told me the concerns that he expressed here. And I do not believe that most of us in the U.S. Senate have had the information either in closed session from the President, or from yourself; and certainly, I do not believe the people of the United States understand what we are potentially getting into down there.

It may well be, as you have indicated, that we have no other option, given the threat that faces us there. But what we found on Grenada, for example, does not necessarily, in my mind, justify the changes of a military conflict as I see it now. But I am willing to be convinced if you can convince me.

Do you have anything to say on that, or do you really consider this a routine exercise down in Honduras today that is temporary in nature, or is it a commitment that we are about to make for a long, long period of time?

PREPARE FOR LONG-TERM COMMITMENT TO HONDURAS

Secretary SHULTZ. I believe that we should be prepared as a country to make a long-term commitment to the health of our neighborhood, and I think that Central America and the Caribbean is very much a part of our neighborhood. Now, a commitment to the health of the neighborhood should not have to emphasize military matters. It is a darned shame that it does. And if we could get the East-West dimension out of all of this and get the Soviet Union to go and pay attention to its own voluminous problems, and could concentrate ourselves entirely on the economic and political aspects of this problem, that is what I think would be the best thing that could possibly happen.

And I might say that, traveling around, it is very heartening in this regard. Democracy is sweeping our hemisphere, and people are so thrilled about it, not only here but in Portugal, in Spain; I

talked to the Argentinians; in Brazil, they are moving very strongly. But it was striking to me recently being in Portugal and people saying: "You know, all these years, we have had dictatorship, and all of a sudden, we are free." And you know, we take it for granted, but it is really making headway in our hemisphere, and that is what we want. And if we could so arrange it that way—and I think we should commit ourselves to a long-term effort.

One of my predecessors told me—I will not say who—as I was trying to get myself ready for the confirmation hearings, and what-not, and struggling to learn something about Central America, he said somewhat deprecatingly: "You know, when I was Secretary of State, I don't think I spent 20 seconds on Central America." Well, I said: "You just stated the problem."

We should pay attention to our neighborhood, like you would in any neighborhood. This is where we live.

Senator EXON. Thank you, Mr. Secretary. My time is up.

We are going to have a second round, I believe.

Chairman DOMENICI. I hope.

Senator Kassebaum is next. Could I just make an observation, and then perhaps you could chair for me if you will be here for 15 minutes or so.

Senator KASSEBAUM. Yes.

COSTA RICA AND HONDURAS SCARED OF NICARAGUA

Chairman DOMENICI. Senator Exon, I was privileged to go down to Central America for a few days, and it was amazing. Just to give you two countries, Costa Rica and Honduras, both of which I think we would say have rather representative elected officials. There is no question about Costa Rica, because it has been democratic a long time. Generally, observers say the elected officials in Honduras are pretty much devoted to good democracy, and are capable of speaking for their people.

It was amazing, considering what I had heard before, what they told us. Those two countries are really not afraid of Americans. We get the impression up here that they just want us out of there. Quite to the contrary. I am not suggesting that we ought to send armies down there, not at all, but Costa Rico and Honduras are not scared of the United States. They are scared of something else. In fact, they are wondering if we won't help more, if we won't keep somebody from hurting them. It happens, in both instances, not to be the United States, but rather, their neighbor down there called Nicaragua. I am just telling you what they tell us.

As a matter of fact, I think Carlos Diaz-Alejandro, one of the Commissioners, was probably totally convinced and turned around on the issue by talking to the officials in Costa Rica. He has great in-depth knowledge of that area, as you may know. It was the Costa Ricans—the "Ticos" as they call themselves—who suggested that they were very, very frightened, and it was not of their big neighbor, the U.S.A.

Now, I do not know whether that is right or not. I am just telling you what I heard.

Senator EXON. Mr. Chairman, if I could just respond for a moment—

Chairman DOMENICI. Sure.

Senator EXON. I am very much interested in what you have to say. If Costa Rica is as frightened as you say they are—which I suspect they might be—why don't they have an army of their own to defend their country?

Chairman DOMENICI. Well, they have not had one for many decades, and they are very worried—

Senator EXON. But isn't it about time they get one?

Chairman DOMENICI. It might be. But you suggest that we help Costa Rico build an army, and see what reaction we will get around here in Congress.

NO AMERICAN MILITARY INSTALLATIONS REQUESTED BY COSTA RICA

Senator SASSER. Well, Mr. Chairman, I might say that Costa Rica certainly is the most democratic government in Central America, and they are on the border with Nicaragua, but we are building no American military installations in Costa Rica.

Chairman DOMENICI. That is right, Senator. And their biggest concern is that the refugees are coming across from Nicaragua by the thousands. They do not know what to do about it. They would like us to help house them and feed them. And they are not coming from Honduras, they are coming from Nicaragua.

Senator SASSER. But they have not requested U.S. military installations there or any construction projects, to my knowledge.

Chairman DOMENICI. I know. I think it will not be long, but they have not yet.

Senator Kassebaum?

Secretary SHULTZ. I think we should nourish this Costa Rican ideal that they are a democracy, they are a free people; they have the job as a government of maintaining law and order in their country as the first order of business of the country; they have no aggressive intentions on anybody else. And the less money they have to spend on military things, the better.

One of the great tragedies of this world, where we have so many countries with so much poverty, is the gigantic amount of money that poor developing countries are having to spend on their defense. It is a shame.

Chairman DOMENICI. Senator Kassebaum.

Senator KASSEBAUM. Mr. Secretary, I believe you are testifying tomorrow in the Foreign Relations Committee; are you not?

Secretary SHULTZ. Yes, ma'am.

PRIORITIES WITHIN STATE DEPARTMENT BUDGET

Senator KASSEBAUM. So I would have some policy questions regarding the aid budget that I would like to ask then. But today, I would like to ask you more from your perspective as an economist—and it is a perspective I greatly respect—how you view some of our budget concerns here, because I would guess you would share the concerns of this Budget Committee about the large deficit that we have projected for next year and the outyears.

And, as your Department has put together their budget, have you weighted out the priorities within the budget that you feel are important? What would you put first, if we have to look to reduc-

tions, because there is a 24 percent real growth in your budget request—all of which certainly can be justified from one standpoint or another—and you have made a very eloquent case. But if we are going to look to reductions, perhaps even suggestions for a budget freeze that have been made, how would you, for instance, put priorities, first and second?

Secretary SHULTZ. First of all, Senator, I think a substantial amount of the increase in the budget—apparent increase—is the movement of the foreign military sales program from offbudget to onbudget. That does make a change in the command on the real resources of the United States of the funds.

Senator KASSEBAUM. I realize that, and that is very—

Secretary SHULTZ. It is a change in budget convention, and it allows us to mix the grant/loan portion in a way that suits the situation better.

So that is a big shift, accounts for a large part of the increase.

Senator KASSEBAUM. But last year's real growth was 44 percent, too, so we have had some substantial growth.

Secretary SHULTZ. Yes, I agree with that, and I think it is justified by virtue of the fact that we let this whole area run down much too far, and we need to build it back up. It is a very important adjunct to our foreign policy, and in many respects, the security assistance budget, if you took all of this and lumped it in with the defense budget, I think you would have to say it is some of the most effective dollars we have, and I have heard Secretary Weinberger say that, so I am not "talking out of school" here. It does help a great deal.

OVERALL ECONOMIC SITUATION HEALTHY

Senator KASSEBAUM. I am guessing you are not going to give me a priority listing as far as your concerns for first, second, and third priority, if, for instance, you have to address some budget reductions. Let me just ask you, does it not concern you, however, if indeed our own economy is going to become so weak that we are not going to be able to sustain strength here that is going to be of any assistance to Third World countries; if indeed we are going to see—as has been suggested—we will become a debtor nation, because we have reached the point where lending and investing of foreign investors has become greater here in this country than our own lending and investing abroad. Does this not place us in somewhat of a precarious position? Don't we have to look to our own economic stability to assist the Third World countries?

Secretary SHULTZ. Well, first, let me go back to your earlier question, and I have a note here that says our foreign assistance is up 2.2 percent overall. I mentioned the offbudget, onbudget, but there is a big increase called for in Central America. So those are two big items.

As far as our overall economic situation is concerned, think it is at present quite a healthy one, and we see our own economy expanding. We see the investment component of the expansion beginning to come in now pretty strong, and moving from equipment purchases to other forms of investment in the United States. We see inflation staying at a level that is low by recent standards. We

see interest rates on long-term obligations, say, 10-year obligations, that still reflect investor uncertainty about what will happen to inflation.

It is often said that the real rates of interest are high. I do not agree with that. I think that what they reflect is a still-lingering question mark in the financial markets about whether inflation will stay low.

Now, with each passing quarter, as inflation stays in there, and our determination to keep it that way stays in there, I think we will gradually see those interest rates come down.

UNITED STATES MOST ATTRACTIVE PLACE FOR MONEY

On the international scene, of course, the United States has become the most attractive place in the world for money, and that is in part because of the security of capital in the United States, and in part because it can obtain a strong rate of return here, and by that, I do not mean simply financial returns by investments in bonds and so forth, but returns to enterprise are relatively very strong in the United States. So this capital is helpful to us, and I think we should continue to welcome it, as we have. It does not constitute a major problem.

What does constitute a problem is that so many other countries have made themselves inhospitable to capital, and what we need to do is get that message around. There are too many countries that in effect have a debt-equity ratio that is all out-of-kilter. When they seek resources from abroad, they do not want equity participation: they want debt. And so debt means no ownership. And when you get your debt-equity ratio out-of-kilter, and you run into any kind of a storm, you are going to get into big trouble, and that is exactly what happened to a lot of people. The same thing happens with a company, and that is why in companies, the treasurers are always watching that debt-equity ratio. We have to watch it, of course, but I think right now, we are healthy. We do have to do something, I feel. There is no question about the fact that large budget deficits, 2 and 3 and 4 years out there as projected, are going to constitute a serious problem, and at some point in time, the government is going to have to step up to that problem. Right now, however, we have a very healthy situation, and I think that the deficit last year has been a stimulant.

Senator KASSEBAUM. Well, I have run out of time.

Senator Riegle?

FOREIGN INVESTMENTS NEED CAREFUL CONSIDERATION

Senator RIEGLE. Thank you, Madam Chairman.

Mr. Secretary, I have been listening with great interest today, and as you know, we are in a severe financial situation. This is the Budget Committee, and as you are well aware, we have run out of money. We are \$200 billion in the red in terms of our operating performance right now as a government, so that any request for additional spending, and especially spending that is going to go outside of the country, spending somewhere else, foreign investments, I think is something that we all have to consider very carefully, especially given our current financial situation.

And I must say that as I see our foreign policy at work, I am very troubled about both the money that we have spent already and the amounts that you are asking for, because I do not see this producing the kind of results that were advertised, and I am not sure they are even realistic to seek in terms of the approach that we have been using, and let me try to make an illustration for you.

GREAT CONCERN ABOUT CENTRAL AMERICA

I think you have gotten the sense already today from the committee that there is a great concern about what may be building up in Central America, and the feeling that regardless of what your current intention is or the administration's intention, that we may find this situation blowing up into a size and scale way beyond what anybody might imagine at the present time. And if you look at the continuity of foreign policy over a period of time, and you start with Vietnam—and you remember that period, as do I, because we were both here serving in the Government during much of that stretch of time—I see many of the same policymakers and many of the same policy premises at work, stretching forward from Vietnam through Lebanon, right now into Central America. I see us having a tendency to Americanize these conflicts, as they start to move in a direction that we do not like, of either putting in more money or more American military effort, and in both the previous cases, Lebanon, which is happening literally this day, as we are having to evacuate our forces, and Vietnam, which was further ago, but the same kind of situation after a 10-year, massive cost of life and dollars, finally, we had to, in a sense, abandon our policy and find ourselves driven out of that situation—it is not much different today, as I see it, in Lebanon. I mean, this is not the final chapter, but it looks to be moving in an unpleasant direction.

Secretary SHULTZ. A somewhat different level of commitment of forces and casualties, to put it mildly.

Senator RIEGLE. That is true, that is exactly right. But I think to the 270 families who have lost a son there, it is a complete tragedy to them, and I am sure you share those sentiments, as do I.

But I am concerned now in terms of whether we are learning anything from these mistakes, or whether we are about to repeat the same mistakes again in Central America on a huge scale, because we use the notion that this is, to use your words, our neighborhood.

Now, if I saw a situation where the Russians were coming over here into Central America with their forces—I am talking about Russian troops—or, if I saw the Chinese coming into our hemisphere with their troops and those kinds of outside forces coming in, I would view that very differently than the kind of struggle that is going on in those nations today and which has been going on for a long period of time, which has been going on for thousands of years, literally, in Lebanon, between warring factions of Lebanese people. And I am very much concerned that what we may be about to do here, you are asking us, I think, maybe to make a downpayment in dollars that is going to lead to, perhaps, a very substantial commitment of people and military force. I am concerned about the development of these bases in Honduras, and I do not want to see

us Americanize, in the same way we have before, the conflict in Central America.

Yes, I think there was a decision to limit the scale of the involvement in Lebanon, as the necessity of that situation and the lack of the support in this country, I think, required. But in terms of Central America, I see a different attitude being worked here, by some of the same policymakers who were some of the chief engineers of the Vietnam policy. I think if there is any prospect that you or anybody in the administration has in mind any contingency where American forces might have to be introduced down in Central America in numbers, any contingency that you see, short of something like the Russians or the Chinese coming over en masse, I think you need to tell us that now, because if that is what lurks in the background as even a remote possibility, and that this request today is, in a sense, a downpayment in that direction, then I think we had better get those cards right out here on the table, because I for one would want to oppose that.

So I would like some response in terms——

Secretary SHULTZ. Are you asking me a question?

PROSPECT OF USING AMERICAN FORCES IN CENTRAL AMERICA

Senator RIEGLE. Yes, sir. My question is, is there any prospect of that, even as a remote circumstance, occurring as I have just described, in the absence of some kind of force like the Russians or the Chinese coming into our part of the world, in terms of sending troops over here. Do you see us, do you see any prospect of us using American forces on any scale in Central America?

Secretary SHULTZ. Well, first of all, our relationships with the Chinese are developing quite well. As a matter of fact, contrary to the general sort of tone of your comment, I think that American foreign policy taken around the world is going extremely well. We have a major problem in Lebanon, in which we have stood for some good things, tried to get them, have not been successful, but will continue to work at it, and are trying to accomplish things that are worth while and very important to our friends.

CENTRAL AMERICA IS BOTH VITAL AND VULNERABLE

In Central America, we face a situation very close to us, and a situation that I believe, and which the National Bipartisan Commission concluded—I will read it to you again—"persuaded that Central America is both vital and vulnerable, and that the United States cannot afford to turn away from that threatened region."

Now, I do not say you have to share the opinion of that Commission, but it was a pretty good effort that they made, and I think that is an important conclusion.

We are proposing in the President's budget to support the recommendations of the Commission. Those recommendations do not include an effort with U.S. military personnel to undertake any military operations in that part of the world. That is not part of the Commission's recommendations. But they certainly recognize the importance of the security dimension here, and the security dimension comes from the Soviet Union through Cuba to Nicaragua—that is the chain. And if you have trouble believing that, then cer-

tainly, I would wish for the privilege of briefing you on what some of the facts are, and I believe that they are really so well known as to be not even controversial, where all this materiel and encouragement is coming from.

POLICYMAKERS REPEATING VIETNAM STEP-FOR-STEP

Senator RIEGLE. I make a differentiation between the materiel and the fighters. In Vietnam, we lost over 55,000 Americans, and the Russians lost virtually no people there, as you well know. And I am making a distinction between the issue of whether the Russians were to come over with their forces, Russian soldiers, into this hemisphere, and engage themselves in a way that would require us as American forces to meet them. I am asking you if you fear that. I do not see that happening. I do not see any sign of that taking place. But what I do see is the drift of events by essentially the same policymakers, that seem to me to be repeating almost step-for-step what we saw in Vietnam, and what I—

Secretary SHULTZ. Well, I do not know who these "same policymakers" are that you are talking about—

Senator RIEGLE. Well, then let me try to get the assurance from you—well, Henry Kissinger is one—

Senator KASSEBAUM. Senator Riegle—

Secretary SHULTZ. The involvement in Vietnam came about in the Kennedy and Johnson administrations, and the Nixon administration sought to get us disentangled.

Senator RIEGLE. Well, I do not think it is a question of—

Secretary SHULTZ. And the cast of characters in the Kennedy and Johnson administrations is not well represented in the Reagan administration.

Senator RIEGLE. Well, Mr. Secretary, there is plenty of blame to go around. The fact is we lost—

Senator KASSEBAUM. Senator Riegle, your time is up—

Senator RIEGLE. Well, Madam Chairman, I just want to finish my comment, if I may. You know, we are all Senators here.

Senator QUAYLE. Yes, but some of us have not had a chance yet. You are way over your time.

Senator KASSEBAUM. Let me just say—

Senator RIEGLE. I do not recall anybody else having been cut off, including the chairman, when he interjected any number of times.

Senator KASSEBAUM. I cut myself off, Senator Riegle. Let me just say that unfortunately, this has to conclude at 4:30, and that is why, in fairness to letting two other Senators speak—

NO PLAN TO USE AMERICAN MILITARY FORCES IN NICARAGUA

Senator RIEGLE. Well, I want to finish at least my sentence, and that is that if you will check the record that over half—there is plenty of responsibility to go around for Vietnam—over half the deaths occurred in the administrations of Nixon and Ford, with the policymakers many of the same ones we have today.

But if we are moving in any direction that is going to involve the widespread use of American forces, even as a remote contingency in Central America, I think you have a responsibility to say that now and get that out on the table. And if not, then I think you

should be just as forthright in saying that that is not a possibility. And I would love to have you do it right here, today. That would be very helpful.

Senator KASSEBAUM. I think the Secretary——

Secretary SHULTZ. I will repeat again what I said. There is not any plan for the use of American military forces in Nicaragua.

Senator KASSEBAUM. Senator Quayle?

REDEPLOYMENT OF MARINES IN LEBANON

Senator QUAYLE. Thank you, Madam Chairman.

Mr. Secretary, I would like to beg your indulgence and go back to the problem area of Lebanon.

Could you clarify for us what the current time schedule is for the next several weeks and several months on the redeployment of the marines? There has been a lot of discussion of whether the marines will be fully redeployed in a matter of a few weeks, a few months; there has been some discrepancy on whether a few hundred will remain or maybe 600 or 700.

Could you lay out for us how the redeployment is, in fact, going to take place and what kind of a residual force will remain in Lebanon, as far as working with the Lebanese Armed Forces, and could you clarify essentially the current status of the redeployment for now and the next several weeks or couple of months?

Secretary SHULTZ. I will give you a generalized answer. For a precise answer of what happens on day 1, day 2, day 3, and so forth, that, you would have to get from the Pentagon, and I am not so sure it would be a good idea to just lay all that out.

But as a general proposition, some redeployment to ships has already taken place. The main items of heavy equipment are in the process of being moved, and there is the expectation that within a period on the order of 2 weeks—but do not hold me to that in any precise way—that is the order of time that the marines that have been holding positions at the airport will have been redeployed onto ships.

Now, we have had a considerable number of Americans there as trainers for the Lebanese Armed Forces, and we have a great concern about terrorism and the importance of training our Lebanese friends in antiterrorist tactics.

In addition, we have an Ambassador and a staff there, and under the circumstances prevailing in Lebanon, we think they are entitled to a little bit more protection than you normally put where you have a detachment of a small number of marines. So the numbers of marines, I don't think have been determined precisely, but it will be considerably more than is typical, running into the hundreds, for basically the protection of our ambassadorial residence, which is practically a headquarters, and for our Embassy and personnel of that sort.

We have notified private citizen Americans a week or so ago that if they wish to leave, they could do so, and we would help them do so. We made that offer also to other foreign nationals, and we did take out of the Beirut area a fairly large number of people on that basis.

POLICY AFTER REDEPLOYMENT TAKES PLACE

Senator QUAYLE. Is it fair to say that our mission, the primary reason for the deployment of the marines there, was to offer the stability and hope that a stable Lebanese Government would emerge and forces withdrawn. Is it safe to say that our presence mission is now going to be on the ships rather than on shore? Is that a fair and accurate description of what the policy will be after the redeployment takes place?

Secretary SHULTZ. That is so, but I think you have to go a little further than that, because in the equation of moving, redeploying, the marines from shore to ship, which is their natural habitat, the President also wanted to beef up our training for the Lebanese Armed Force and our training in antiterror. So there was a balance there.

Now, the Lebanese Armed Force in the last couple of weeks have had some reverses, and precisely where all of this will stand as the situation unfolds, obviously, we have to work with that, and you just do not go plowing ahead on something that you thought was the right way to proceed a month ago if the situation has changed.

But basically, we continued to support the legitimate Government of Lebanon, and we should remind ourselves that there is a legitimate Government of Lebanon, produced by a constitutional process. President Gemayel is the President, and we support that Government, and we support him. And I might say, in supporting him personally, there is a person with tremendous courage as an individual, who did not need to be there, but is, trying to do what he can to bring about a genuine Lebanon, at great personal risk to himself and his family. And I will tell you, I tip my hat to him as an individual, and he deserves admiration.

Senator QUAYLE. Let us separate out the training of the Lebanese Armed Forces by our forces, a mission which I accept and understand. As far as the marines are concerned, is that presence, not the training, but that presence, now going to be maintained off-shore?

Secretary SHULTZ. Yes, sir.

Senator QUAYLE. Thank you, Madam Chairman.

Senator KASSEBAUM. Senator Johnston?

SUPPORT FOR EL SALVADOR TOO LITTLE

Senator JOHNSTON. Mr. Secretary, as you said in your opening statement, the worst thing we can do is to support Central America, particular El Salvador with too little. I have been here a number of years now, and while we have supported El Salvador with what now appears to be too little, we did not think so at the time, and it seems to me that the situation is deteriorating in El Salvador, that we are losing the war. I would suggest that the best explanation I can come up with as to why we are losing the war is because we are losing the war for the hearts and minds of the people, which is very regrettable. And why is that? I think, perhaps, because of the death squads, because of the lack of human rights in El Salvador.

Now, when I look at what the United States has done there, I think our record is pretty spotty. The rhetoric has been OK back

here. But I know when Ambassador Hinton spoke to the chamber of commerce about tough action on the death squads, he was canned, alone with Secretary Enders, very quickly.

Then, as a report in the AP, dated February 2, 1984, one of the four military officers who left El Salvador and was identified by the Vice President as being one of the great instigators of the death squads, has now located in California. This is Lt. Col. Aristitas Alfonso Marquez, Director of Intelligence for the National Police in El Salvador until November 1981. He has located in San Jose and is taking a course in civilian matters.

First of all, can you confirm or deny this report? Has Colonel Marquez located in San Jose?

Secretary SHULTZ. I do not have the answer to that question, Senator, but if I may make a comment. I would have to just flatly disagree with almost everything you said—I hate to do that, because I remember you from the last time I was in the government, and I have followed your career, and I know you have spoken what you think. But I think you are wrong.

Senator JOHNSTON. Well, I would like to think I am wrong. I have supported this El Salvador policy up until now, and I must say, we get great words, but I see very little action going on there to reassure me. And I think—

HEARTS AND MINDS OF PEOPLE ON NEW ELECTION

Secretary SHULTZ. Well, first of all, let me make a few comments.

On the military side, there are ups and downs. Right now, from all I can read, the El Salvadoran military seem to be on somewhat of an up.

Second, from the standpoint of the hearts and minds of the people of El Salvador, I do not know how you can come to a judgment like you came to, but I think we can say this. They are planning to have an election for President on the 25th of March. Two years ago, they had one for their constituent assembly. Over the armed resistance of the guerrillas, around 80 percent of the people came and voted in that election. I think that tells you where the hearts and minds of the people were at that point in time.

Senator JOHNSTON. Well, that was some time ago.

Secretary SHULTZ. Let me finish. Now the guerrillas have caused a lot of damage. They have blown up a lot of bridges and power plants and set the country back a lot. I do not know that you win the hearts and minds of people doing that. It is hard for me to imagine that they really have.

They have been offered bona fide to take part in this election that will be held, and it will be superdemocratic; there will be more observers of that election than there are voters, I am sure, by the time everybody who is curious gets through with going down there. I think Senator Kassebaum went down to the one 2 years ago and observed it for herself, and no doubt, there will be plenty of observers from the Congress of the United States at this election coming up. There are six candidates for President, none of them from the guerrilla group, who could have put somebody up. They are all campaigning throughout the country. I had the privilege of meeting with them for lunch a couple of weeks ago, and the general es-

timates are that perhaps the voting turnout will not be as high as it was the last time, but it will still be 60 or more percent, maybe higher than that—some think quite a lot higher. But by our standards, that is very high. And I think that must tell you something about where the hearts and minds of people are.

DISINFORMATION CAMPAIGN COMING FROM CUBA

It is also true—we know this—that there is a very carefully laid-out disinformation campaign coming from Cuba, being spread through other countries, and the general line is that the Salvador Armed Forces, so the Cubans say, are worrying us because they are so weak, and we do not want them to fall apart right away, because the United States would come in. That is the word they are spreading around. It is ridiculous, but people are repeating it. There is no truth to that—

Senator JOHNSTON. Well, speaking of disinformation, how about the President's—

Secretary SHULTZ. If I could just finish up—so they are doing that, and they are also saying—

Senator JOHNSTON. I know that, but my time is about up, and I wanted to ask more than one question.

Secretary SHULTZ. You made a lot of provocative statements, so I have to be equally so, I guess. They are also wanting to have the election postponed, so that a government can be formed from these guerrillas, and then they can have a new election.

Now, why do they want the election postponed? I think it is perfectly obvious. They want to get it postponed so that there will not be an elected President of El Salvador. Once there is an elected President of El Salvador, there is a legitimacy there that you cannot take away, and no one can say about the hearts and the minds of the people and so on. If somebody stands for election, and most of the people come out and vote for him, then, by God, he is the legitimate President and they want to avoid that if they can possibly avoid it.

NOT DOING ENOUGH ON HUMAN RIGHTS

Senator JOHNSTON. I understand that, Mr. Secretary, but my point is we are not doing nearly enough on human rights. When the President comes out and says he does not know whether the death squads are from the left or the right, it seems to me that encourages the right-wing death squads. We know they are right wing, 95 percent of them. And the firing of Ambassador Hinton, our failure to take strong action, and apparently, with this lieutenant colonel—

Secretary SHULTZ. Senator, I cannot just sit here and have you say these things. Ambassador Hinton was not fired. I know Ambassador Hinton very well, and worked with him closely when I was in the government the last time, and admire him a great deal. Ambassador Hinton had been in a tough post, and he got moved—to another tough post, but very different. He is in Pakistan now, a darned good assignment.

Senator JOHNSTON. Well, didn't that come on top of his statement to the chamber of commerce?

Secretary SHULTZ. He made a statement to the chamber of commerce that is not that unlike one that Mr. Pickering has made. We have all made—I have made statements before Senator Kassebaum's committee and other committees in both the Senate and the House, about the system of justice and what needs to be done about it, and furthermore, there has been a lot of progress.

Now, you can draw a chart of what has happened to the number of civilian deaths, and it goes like this, really. [Indicating.] There has been a huge change. The only trouble is there are still too many, and the only trouble is it takes too long for the system of justice to operate, and it is too uncertain, and it needs to be reconstructed, all of which are things we are working on. But there has been progress.

Senator JOHNSTON. I would like to followup, but I am out of time. Thank you, sir.

Senator KASSEBAUM. Senator Chiles? Senator Grassley has no questions at this time.

AUTHORITY TO INCREASE MILITARY AID TO EL SALVADOR

Senator CHILES. Thank you, Madam Chairman.

Mr. Secretary, can you tell us—my understanding is that under section 21(d) of the Arms Export Control Act, it would allow the sale and shipment of arms overseas on a cash-on-delivery basis, rather than prepaid, as is normally required, and it would allow payment to be delayed 60 days automatically and then another 60 days if the President finds a second delay would be necessary for national security reasons. I understand that 506(a) authority allows the President to draw down military stocks and give them to another country as grant aid, and under 506(a), the President would then ask the Congress for emergency replenishment of the stocks drawn down, that that has been done before, and traditionally, Congress has not always gone along with that.

Can you tell us, is the administration planning to use section 21(b) authorities under the Arms Export Control Act, or 506(a) authorities under the Foreign Assistance Act, to increase the level of U.S. military aid to El Salvador before Congress has a chance to review the administration's proposal for supplemental military aid?

Secretary SHULTZ. You are asking me a very carefully put question—

Senator CHILES. Well, I have just read the stories that this is going to be done; I have read some denials, I have read some hedging. And you are the man I thought I ought to ask.

Secretary SHULTZ. I am not complaining. I mean I am just going to be careful. I think perhaps what I will do is read this to you.

The administration requested—

Senator CHILES. I read part of my question to you. That would be fair.

EL SALVADOR MILITARY HAS NO ASSURED FLOW OF RESOURCES

Secretary SHULTZ. Well, generally, I prefer to just kind of tell you what I think from the heart, so to speak, or mind, or something.

The administration requested \$86.3 million in military assistance for El Salvador during fiscal year 1984. The Congress appropriated \$64.8 million, of which only \$45 million is immediately available, about half of what was originally requested. This, I might say, is part of the pattern of the problem with the El Salvador military. They do not have any assured flow of resources.

An additional \$19.4 million can be expended after the investigation of the churchwomen's case has been substantially concluded and a verdict reached in the trial of the accused. Now, that case has been proceeding. It has been raised to the level here recently for which a jury can now be selected, but that is not likely to occur until May. In other words, from any near-term standpoint, the \$19.4 million is not available.

We are concerned that the Salvadorean armed services will run out of key materiel over the next few months, during which time they are likely to face increased guerrilla efforts to disrupt the March 25 presidential elections and runoff elections a month later. To be elected president in El Salvador, you have to get a plurality, a majority, rather. So, if there are six candidates, maybe somebody will get a majority, but most people seem to think it is likely there will be a runoff, which will not take place until probably the end of April or early May sometime.

So there is a concern with future supplies that would also lead to a husbanding of resources and a reduction of offensive efforts during this critical period. What we are saying to the Salvadorean Armed Forces is, "There is going to be an election, and during the period of an election, you are going to have to do something extraordinary in the sense of getting out around the country and trying to keep things in some measure of stability so this election can take place."

As prudent managers of U.S. foreign policy, we are looking at this potential problem and the various options about how we might address it. There has not been any final decision made. So, in other words, on your section 21(d), what I am saying is there has not been a decision made. So I am not saying "Yes," but I am not saying "no," either, which is I guess what you wanted to hear.

Senator CHILES. I do not know why you had to read that to me, Mr. Secretary. I think you could have spoken that from the heart.

Well, Mr. Secretary, if that is something that is pending, then, can you tell me an answer on the other section, on the 506(a) funds?

Secretary SHULTZ [conferring with staff]. There has not been any decision made about the use of the 506 authority for this purpose or other purposes, but the authority is there, so presumably, it is there for a purpose.

Senator CHILES. Well, it would seem, Mr. Secretary, for the reasons that you state, if the administration perceives that this problem is there and that these funds might not be sufficient I would think that the process would be to come to the Congress for an emergency appropriation.

Secretary SHULTZ. Well, we have an emergency supplemental before you. But I do not suppose there is much chance it will get acted on before when.

Senator EXON. We are going to take up school prayer before we get into that.

Secretary SHULTZ. Well, I am just telling you we have an election coming up in roughly a month, and everybody is critical, and Senator Johnston, about the Salvadoran Armed Forces and losing and so forth. My gosh, if you will not give them any resources, and the other side is pouring resources in, what do you expect? You have got to give a sustained amount of resources.

Now, in the election period, they have some very special responsibilities, to try to get out around the whole country and maintain law and order, and what will happen insofar as the guerrilla activity toward the elections remains to be seen. In the last election, they tried to break up the election by violence, and I do not suppose there is anybody here who would defend that.

So we have to look to that possibility, and not only the March 25 round of elections, but probably another round.

Senator CHILES. My time is up.

[Whereupon, Senator Domenici resumed the chair.]

Senator KASSEBAUM. You came in just at the right moment, Mr. Chairman. We have concluded, I think, the hearing.

STATE DEPARTMENT PLANNING TO INCREASE PERSONNEL

Senator GRASSLEY. I would ask one question. The salaries for people in the State Department are increasing by 29 percent the 2 years between 1983 and 1985. Is that increased personnel, or is that basically increased salaries and upgrading of people within the Department, or a lot of new employees?

Secretary SHULTZ. The State Department salary levels are governed, like everybody else's, but we are planning for some increase in the numbers of personnel, and this is a matter of tremendous importance to us, as particularly the so-called political and economic reporting lines in the State Department have been badly run down over the last 10 years or so and must be built up. So we seek to do that.

Senator GRASSLEY. Will those be basically new positions here in Washington, or around the world?

Secretary SHULTZ. Around the world.

TREMENDOUS FOREIGN INVESTMENT IN UNITED STATES

Senator GRASSLEY. One other question on a different subject. Are our friends doing anything to change their own economies, to stop the flow of their investment in this country, because of the high value of the dollar, and if they are doing anything like that, is that long-term detrimental to our economy, or helpful to our economy, as you see it?

Secretary SHULTZ. I think basically, it is helpful to our economy if other economies are healthy, and if the things that other countries do are actions that make their economies more attractive to capital, they are going to be better off, and we will be better off, too.

I think there are increasing numbers of countries that are concluding that the command and control, government-dominated type of economy does not work anywhere near as well as a more open,

market-based-type economy does. And so, there is a shift taking place. We seek to encourage it with our efforts.

For example, the African initiative that Mr. McPherson has put forward, that the President has put forward, and he is going to work with it, is specifically geared to that. Now, it may be that your question had a different thrust, namely, are countries trying to block the flow of funds by forcibly not allowing them to leave. And of course, there are countries that are making great efforts to do that under the current circumstances.

Senator GRASSLEY. No; I am sorry, I was not very clear. I do appreciate the response that you gave, and I am glad our administration is doing that and encouraging those sorts of local economies that will have capital come in and have private sector investment. But I was thinking, though in regard to the tremendous foreign investment in this country, because of the strong status of the dollar, and I assume—and my question to you, is whether or not I am true—that some of our friends, like Western European nations, are beginning to take action that will stop that outflow of their funds into this country, and whether or not we see that as good or bad in regard to our economic health and our political relationship with those countries.

Secretary SHULTZ. If the blockage occurs as the result of a kind of escalating and more and more controlled situation, then I think that that is bad for them, and in the end, bad for us. If it occurs as a result of people scratching their heads and saying, "There must be a better way than price controls and government ownership of what we would normally think of as appropriate areas for private activity and so on," then I think they will keep capital at home, and on the whole, that will be a healthy thing.

So it depends upon the way in which it takes place.

Senator GRASSLEY. Thank you, sir.

Chairman DOMENICI. I have checked this out with Senator Chiles. We are going to have a net assessment briefing on the 23d at 1:30. By definition, that must be a closed meeting. We cannot have a net assessment without it being closed, and we have to vote on that. I would ask unanimous consent that we be permitted to poll our members so as to seek permission to conduct the net assessment briefing in a closed session at 1:30 p.m. on the 23rd. We have not had one in several years. Without objection, we will poll that issue.

Mr. Secretary, we are most appreciative of your spending as much time as you have, and we apologize if some of the questions have not been relevant to our business of budgeting, but it is very difficult to draw the lines.

Senator EXON. Mr. Chairman, are we about ready to conclude, or are we going to have a second round?

Chairman DOMENICI. I thought we had agreed to that.

Senator KASSEBAUM. I did not know anybody had second round questions.

Senator EXON. Well, I have been here since the beginning, and if I could have 2 minutes of the Secretary's time.

Chairman DOMENICI. Two minutes, and then we will recess.

Go ahead, Senator Exon.

Senator RIEGLE. Mr. Chairman, I would like to make the same request.

Chairman DOMENICI. Two and two is four. Is that all right with you, Mr. Secretary, 4 minutes?

Secretary SHULTZ. Sure.

MODEST TRAINING PLANNED FOR COSTA RICA

Senator EXON. Mr. Secretary, I think these are basically yes or no numbers questions. I, too, am concerned about Costa Rica. It is a democracy. They are friends of ours, but they have no way to defend themselves.

Are there any plans or programs to sell or give or loan military equipment to Costa Rica so they can defend themselves?

Secretary SHULTZ. There is a plan for modest training that is essentially law and order-oriented military training, and that is to the tune in the fiscal 1984 supplemental of \$7.85 million, and in the fiscal 1985 request, \$10 million.

NUMBER OF AMERICANS STILL IN BEIRUT

Senator EXON. Thank you.

Switching now for a moment to Beirut, how many people do we have left, connected with our Embassy or with the home of the Ambassador? You said you were concerned about terrorism, and I am sure we all are. I think we have a threat for terrorism activity there in the future. How many people do we have left over there in the Embassy or connected therewith, or Americans in general still in Beirut, and in your answer to that, why don't we move our Embassy out of the war zone into a safer location maybe somewhere else in Lebanon, or out-to-ship until the situation in Beirut stabilizes?

Secretary SHULTZ. I do not have the exact number, Senator, but I can get you that for the record. I would give you the number of U.S. nationals in our Embassy, the number of foreign nationals working in our Embassy, if you would like that——

Senator EXON. I would like that.

Secretary SHULTZ. The number of Americans, as best we know them, who are in Lebanon—you have to remember many Americans who are in Lebanon are Lebanese who came to America, who are now American citizens who have gone back to Lebanon, and have chosen to live there. I will also provide you, if you would like, the numbers of people that we took out as a result of——

Senator EXON. Well, I am concerned about what is left there.

Secretary SHULTZ. Yes, I will be glad to get that for you.

[The following was subsequently supplied for the record:]

As of February 28, there were 286 official American personnel, including 35 State Department employees, one USIA officer, and 250 military personnel affiliated with the Mission. Our official presence includes 150 marines who are responsible for internal and external security at U.S. Government facilities in Beirut.

There are an estimated 1,900 American citizens in Lebanon, 950 of which reside in the Beirut area.

NO NEED TO MOVE EMBASSY

Senator EXON. Now, if a war is on, generally, we do not try to keep embassies in war zones. Why don't we move someplace?

Secretary SHULTZ. Well, our Embassy is there, it represents the stature and presence of the United States, and we do not see that there is any need to move that Embassy right now, and we think it would give the wrong signal.

We are not there as a military force. We are there with our diplomacy. Our Ambassador is very, very active; he goes all over the place. So that is his residence, and I think it would be a mistake at this point to give it up.

Senator EXON. Thank you, Mr. Secretary.

Thank you, Mr. Chairman.

Chairman DOMENICI. You are welcome.

Senator Riegle?

PEOPLE'S WILLINGNESS TO FIGHT

Senator RIEGLE. Mr. Secretary, I appreciate your patience. You have talked off and on about the hearts and minds issue and trying to get people to think a certain way, or support our values—I mean, that is a general proposition that I think we all support. But it seems to me that in the end, what it comes down to is not necessarily just what people say, or we think is in their hearts and minds, but whether they are willing to fight to defend it—whether they are willing to fight, not ask us to fight in their place, but whether they are willing to fight in a revolutionary-type situation. And we have got these revolutionary situations all over the globe, not just in Central America, and we have been through it in our own country, with both the Revolutionary War and a Civil War which was, in a sense, like a revolution.

And what I am wondering is this—and again, I want to go back to the parallel of before—when the crunch came in Vietnam, the South Vietnamese troops that we had supported financially and in training and so forth, when the crunch came, many of them melted away, and even though there was twice as large a population in South Vietnam, they were not able to defend what, presumably, we may have thought that they felt.

We have just seen President Gemayel's troops melt away, a very substantial number of them, and you speak to his courage, and I do not doubt the fact that he himself is courageous. But many of his troops melted away when the crunch came.

And what I am concerned about is, if we go down this road in Central America, and we support a side that comes under increasing pressure and the crunch comes, then maybe the same things happen, and our side starts to melt away, whether it is in El Salvador or wherever—are the American people going to be called upon in that situation, where those troops cannot handle it, to step in, as we did step in in a very dramatic way in Vietnam. We stepped in for 10 years. Now, we have not been 10 years in Lebanon, thank God, but I am wondering if there is any thought that if the troops that we are supporting down there cannot hold their own, that at some point, American troops will be asked to make up the difference—because if there is even a remote chance of that right now, I

first of all want to say that I want to oppose this policy at the outset, but that is just one voice and one vote. But if there is any possibility of that, I think you need to let people know it. I think the country would need to understand that now so they can start to think about that question—not at the end, when the crunch comes, but right now, in terms of what our intentions would be if these troops that we are training cannot hold their own.

Secretary SHULTZ. First of all, just to comment about Vietnam. Since North Vietnam won that war, we have seen horrible things happen in South Vietnam, in what we now call Kampuchea, in Laos. We see other countries, like Thailand, threatened. We see an absolute flood of refugees coming out of Vietnam, to the point where, of course, it alarms Thailand as a country of first asylum, about what they are going to do with all these people who want to escape this wonderful system of North Vietnam.

So, to the attitude that it does not make any difference, that we are on the wrong side of these things, or something, I think the people there are voting with their feet or their paddles or whatever they can do to get away from it. And I would not like to see the same thing happen in Central America.

LEBANESE ARMY BUILT FROM VARIOUS CONFESSIONAL GROUPS

Second, insofar as Lebanon is concerned, I do not think that the analogy is an apt one, because the Lebanese armed force was built up from the various confessional groups deliberately, and was an effort to build a multiconfessional force, and is today the only multiconfessional organization in the country. It is a very difficult thing to do, and our military training people did a brilliant job of it.

Now, the tensions and pressures in Lebanon have been tremendous, and the threats, sort of coming at the members of these confessional groups in the armed force from their constituencies, you might say, and from the Syrians; very serious threats, threats to be killed, and to kill their families, and things like that. So they do not play games there. And it has been remarkable, I think, that the LAF has held up as well as it does. It still holds together, although it has had some melting away, as you put it, and it is a problem. But it is a different kind of problem than we saw in some other places.

Senator RIEGLE. Or Central America, generally.

PROVIDE NECESSARY RESOURCES TO CENTRAL AMERICA

Secretary SHULTZ. Yes, or Central America, generally; it is different.

As far as El Salvador is concerned, I think that before we draw any conclusions about people's willingness to fight in El Salvador, we ought to take a look at the casualty rate—it is pretty high—and we ought to take a look at what we do to them. And when we string out our willingness to give military resources to them so that they can fight for themselves, give us the tools, when we string that out so that it is impossible for them to make a plan and know in February where we are, whether they are going to have the resources they need to so police the second round of an election

in April, we are not doing very much to help that armed force be effective.

So, this on-again, off-again approach that we have gotten into, as a result of the structure of appropriations, is making it extremely difficult for that armed force to be effective.

And I think that we should pay attention to what it says in that Kissinger Report. We should provide the resources that are necessary and allow them to do the job.

NO PLANS FOR INTERVENTION IN CENTRAL AMERICA

Senator RIEGLE. If we do that, Mr. Secretary—and this is my last point—if we do that, and it turns out that they cannot hack it, either because they do not fight as hard, or maybe they feel it, but they are just somehow not up to the task, does there come a point, if our side is losing, with the military support, that it would mean that we would have to intervene with our own people—that is really the issue here.

Secretary SHULTZ. We have no plans for such intervention. We have a great concern, however, that the Congress is going somehow to rush out—I will rephrase that—that somehow or other, as a result of the structure of appropriations, we are going to precipitate a calamity, if we are not careful, to which there will be a general desire to respond—not by me or you only, but by the American people, generally. I do not think the American people are of any kind of a mind to have the Soviet Union come in and take over in Central America. That is in nobody's mind, in the way they were doing in Grenada.

So, right now, we have an opportunity where there are people who are stand-up people, who want to fight for their country and who need resources, and we will not provide them, and we should provide them.

Senator RIEGLE. And if we do provide them, and they still cannot win this war, you are not prepared, then, to see our American forces go in and fight the war for them.

Secretary SHULTZ. I will say that we have no plan for that.

Senator RIEGLE. Well, I wish you would go further than that. I mean, you can develop a plan if you need a plan. The point is, I think if you want the money, you are much more likely to get the money if you are prepared to say, we are not going to put our troops in there in any circumstance, barring an invasion of forces from abroad.

Secretary SHULTZ. Do not say if "I" get the money.

Senator RIEGLE. Well, you are asking for the money.

Secretary SHULTZ. I am not asking for the money. I am trying to represent the interests of the United States as best I see them, and I know you are, too. This is not money for me to do something that I want to do. It is money to do something that we must feel together is in our interest, and it is very important to think of it that way.

Senator RIEGLE. I respect your sincerity, and my only interest is to try to figure out now where this policy may be leading. That is my concern. It is just as simple as that.

I thank you.

Chairman DOMENICI. Thank you, Mr. Secretary.

I wish we all had that much interest in all the programs we adopted; if before we did them, we knew where everything was going to go, I think we would be much better off.

We stand in recess.

[Whereupon, at 4:55 p.m., the committee was adjourned.]

WRITTEN QUESTIONS FROM SENATOR SYMMS TO SECRETARY SHULTZ AND THE RESPONSES

Question: According to the General Accounting Office, as well as several qualified economists, a great deal of U.S. aid to Central American countries is just supporting corruption. As I understand it, by over-invoicing and other techniques, government officials are siphoning-off between 20% and 50% of the U.S. aid and transferring it to bank accounts in the U.S. and elsewhere. Could you comment on why the U.S. is supporting corruption?

Answer: We are not, of course, supporting corruption in Central America. What we are supporting is an economic recovery that will provide more jobs and improved living standards for large numbers of people who have suffered from the sharp economic declines of the past four years or so. And we are beginning to see signs that our programs are accomplishing their objectives. The decline in GDP in El Salvador was halted last year, and in Costa Rica there was a modest rise of 0.8% in economic output.

We are well aware that over-invoicing is a problem in Central America; but it is not a problem peculiar to that region. Public- and private-sector importers all over the world engage in this practice. It occurs also in trade within our borders. We certainly don't condone it, and we have taken action to reduce it.

In each of the Central American countries where we provide ESF assistance, we have taken steps to improve general foreign exchange control and allocation procedures and to establish specific program-oriented monitoring systems which enable A.I.D. to determine whether foreign exchange resources are being used efficiently. We maintain close collaboration with host country counterparts in the respective central banks at both the policy and technical levels. We attempt to ensure that all aspects of the foreign exchange flow systems have been examined. If we find a loophole in the procedures in force, we take steps to close it.

I don't know how these figures alleging 20% and 50% leakage were determined. I haven't seen any convincing evidence that the problem is that great.

Question: Did you agree with the recommendations of the Kissinger Commission to increase our aid to Central America?

Answer: I certainly agreed with the Commission's recommendations to provide assistance to Central America. This assistance is necessary to support the economic, political, diplomatic, and security measures which will be pursued simultaneously.

I believe that the timely provision of U.S. resources can foster economic and political stability within the region, and lead to widespread prosperity and democratic institutions in each Central American country which qualifies for our assistance.

Question: Wouldn't more aid just increase our support of even more corruption? It seems to me that it would, since we cannot even deliver 100% of the aid that we now send these countries.

Answer: Allegations to the contrary, corruption is not epidemic in Central America. Controls exist over the U.S. assistance being extended to the region, and additional measures are taken as necessary to ensure accountability for our funds. We are confident our resources are being used as intended.

We will include additional controls over the increase in resources we are proposing. In the near term, the bulk of our assistance will emphasize private-sector activities, not expansion of government bureaucracies. Over the longer term, we will be providing to Central American governments the institution building help, training, and technical assistance that will enable them to carry out larger scale programs more efficiently.

QUESTION: Do you think private property is an essential institution for a free society?

ANSWER: Yes, the right to own private property under protection of law is an essential human right in a free society.

QUESTION: Why then does the Agency for International Development support "land reform" in El Salvador? After all, "land reform" there is supporting the development of "coops" in which the farmers can't voluntarily enter, can't sell their "rights" once the farmers are chosen as coop members and these coops are run by a government appointed director. Isn't this just collectivization?

ANSWER: Concentration of property in the hands of an elite few contributed to the overthrow of the Salvadoran government in 1979. The new government initiated a major redistribution of land, with compensation to former owners, to provide social and economic opportunity to hundreds of thousands of the rural poor who had little opportunity under the previous system. A government has, of course, the right to claim property for the public good. The Salvadoran government is redistributing large holdings of over 1,235 acres to newly formed private cooperatives. A procedure through which cooperative members can sell their shares in the equity of the cooperative is not clearly established, and is recognized by the Salvadoran government as a problem. We have discussed with the Salvadoran government the issuance of shares or some similar method of enabling members to sell their "rights" as well as to enter and exit the cooperatives in a clearly defined manner. Currently, additional membership is left to the discretion of the cooperatives.

As established in the law, the GOES has the responsibility for "co-management" of the cooperatives. This was initially interpreted to mean the GOES would appoint, not a "director", but a co-manager to work with the cooperative management until such time as the cooperative could be self managed. This has not worked satisfactorily and is currently being replaced by a system in which the cooperatives hire qualified farm managers from the private sector. As of the present time, 50 cooperatives have hired managers and 100 more are in the process of selecting a manager.

QUESTION: Another aspect of "land reform" is the so-called land-to-the-tiller program. In this program, the government forces land owners to sell their land at below market prices. The land can then be used by the peasants. But the peasants don't get title to the land for 30 years. If the peasants die before the 30 years is up, the land becomes the state's. Since the average age of peasants is about 40, life expectancy is about 50, the peasants can't sell this land before they receive title and they can't pass it on to their heirs -- the state will ultimately keep most of this land. So isn't this just another way to collectivize the lands in El Salvador?

ANSWER: Under the decree 207 program, also known as the land-to-the-tiller program, landlords are not forced to sell their land at below market prices. There never has been an active land market in El Salvador, so market prices are extremely difficult to determine. The law prescribes that the owners declared value on the 1976/77 tax records be used as the most accurate estimate of true value. The 1976/77 records were selected because in those tax years, the GOES allowed land owners to adjust the value of their property without penalty or taxation of the capital gain. Many observers believe that this system has resulted in an overvaluation of land in many instances. Under this program, the peasants receive a provisional title as soon as the legitimacy of their claim has been established and a definitive title as soon as compensation has been agreed upon with the landowner. The peasant must pay for the land, so the title has a mortgage ranging from 20 to 30 years at the option of the peasant. Article 8 of decree 207 establishes that the title can be transferred to an heir upon the death of the owner and that the land can be used as collateral for production credit. This land does not revert back to the state. The law does prohibit the sale of this land for 30 years. We agree that this provision is excessive and we have discussed a change in this limit with the GOES. We believe that this prohibition will be changed.

PL 480 FOOD AID FOR ETHIOPIA

Question: It is my understanding that the U.S. Embassy in Addis Ababa, Ethiopia has cabled the State Department that AID food aid is entering the black market in Addis Ababa at such a rapid rate that black marketeers are complaining because AID food is pushing black market prices down. Isn't this another piece of evidence that our aid is supporting massive corruption?

Answer: The U.S. and other donors have provided significant amounts of food aid to feed hungry people in drought-stricken areas of Ethiopia. While most of the food reaches the intended recipients, some food shipments have been inadequately administered by the Ethiopian Government. It has been difficult for donors to adequately control the food aid in Ethiopia, particularly in light of poor cooperation from the Ethiopian Government.

Both Catholic Relief Services (CRS) and the World Food Program have allegedly had some of their relief commodities in Ethiopia diverted. The U.S. Embassy cabled Washington in November 1983 that PL 480 vegetable oil containers with CRS markings were appearing for sale in markets in Addis Ababa. However, the Embassy has noted that because some emergency food is allowed to be sold

to cover transportation costs of food to drought regions, it was not possible to say that appearance of this oil in the market was evidence of diversion. With CRS documentation it has been possible to determine that there was a loss of approximately 2 tons out of 1,468 tons shipped in FY 1983.

In March 1983, an article in the London Times accused the Ethiopian Government of using World Food Program (WFP) food aid donated by the European Economic Community (EEC) to feed soldiers or pay for arms sales. The EEC investigated the claim and found no proof of the allegations. In December 1983, the London Times published a follow-up article about the diversion and cover-up of 15,000 tons of WFP food aid. It reported on a letter provided by a defecting senior official of the Ethiopian Government which gave instructions on how to conceal the diversion. According to the letter, four-fifths of the 15,000 tons was sent to the crop marketing organization instead of to a land settlement project. The remaining 3,000 tons were sent "by

mistake" to the Ministry of Agriculture and not returned. Some of the 1,200 tons of milk and oil destined for the project were either used for "relief work elsewhere" or "hoarded."

The AID Administrator wrote directly to James Ingram, the Executive Director of the World Food Program, asking him to account for the diversion of the 15,000 tons. The letter also asked him to urge the Ethiopian Government to take steps to assure that all food aid reaches its proper destination. Mr. Ingram responded that WFP had investigated the situation and determined that the allegedly diverted commodities were exchanged for commodities going to another project without the authorization of WFP/Rome. He indicated that WFP had received the assurances of high Ethiopian Government officials that they would institute new controls to prevent similar problems occurring in the future.

Question: A.I.D. is sending heavy-duty pick-up trucks to Ethiopia. These trucks will cost about \$65,000 each. Isn't this a bit too much to be paying for pick-ups?

Answer: I am mystified by this question and wonder where the information comes from. A.I.D. has not had a development program in Ethiopia for some years. The only recent assistance we have provided under the Foreign Assistance Act is support for emergency food distribution in the northern areas of Ethiopia. While those funds are used, inter alia, for the transport of food to hungry people, they will only be used to rent or lease rather than to buy vehicles.

Agency for International Development's
Housing Guaranty Program

QUESTION: A.I.D.'s Housing Investment Guarantee Program funnels U.S. aid to U.S. contractors who build housing for workers who are working on construction projects, and these houses are left in the countries, where U.S. firms are doing work after the firms leave.

Could you tell me why we are using these funds to support housing built by U.S. firms in countries that are unfriendly to the U.S.? For example:

Guinea
Angola
Mozambique
Ethiopia
Tanzania

ANSWER: A.I.D.'s Housing Guaranty program is not being used in any country of the world to finance housing built by U.S. contractors for workers who are employed in the construction of their projects.

A.I.D.'s FY 85 Congressional Presentation does reflect a proposed \$2 million HG for Guinea to be authorized in FY 84. The project might involve the financing of housing for lower income workers of the Compagnie Bauxite de Guinee (CBG) which is partially owned by U.S. interests.

The project, if authorized, will be in full compliance with all statutory requirements and with A.I.D.'s shelter policies. It is still being analyzed carefully. We have not yet decided whether or not to proceed.

Question: Could you explain why A.I.D. has not stopped the flow of U.S. aid to Zimbabwe? The State Department has said that it wants to stop future aid, but why hasn't it stopped that which is already in the pipeline?

Answer: The State Department fully supports the provision to Zimbabwe of aid currently in the pipeline, aid planned for FY-84 and aid proposed for FY-85, all of which are delineated in the FY-85 budget document, the Congressional Presentation for Fiscal Year 1985, Annex 1, Africa. There has been no change in the position of the Department of State vis-a-vis aid to Zimbabwe since the submission of that document.

Question: Are A.I.D. officials negotiating with a group of private citizens, fronting for the Government of Tanzania, who will receive U.S. aid?

Answer: No. The Brooke Amendment prohibits assistance to private Tanzanian citizens as well as the government. Thus, although a group of Asian businessmen in Tanzania approached our A.I.D. Mission a few months ago to discuss the possibility of U.S. investment in the agriculture sector, we were unable to provide any assistance. The Tanzanian's interest had been stimulated in turn by a GOT policy document on the agriculture sector, dated March 31, 1983, which stated that the government welcomed private investment in commercial agriculture. Our A.I.D. Mission subsequently proposed to conduct an assessment of the Tanzania private sector and agribusiness development situation, in an attempt to exercise an intermediary role and provide an information base that could be useful to potential investors. The assessment was never carried out because of the Brooke Amendment.

Question: Although we don't have diplomatic relations with the country of Sao Tome, which is run by a harsh dictator, and which almost always votes against the U.S. in the U.N., A.I.D. is supporting agricultural research there by the Trans Century Foundation, a front for the government. This Foundation is run by David North who many say is an anti-American, anti-Reagan left-winger. Why is this program being funded? Also, it seems to me that the socialism is the problem with Sao Tome's agriculture, since, before the current regime, the country was self-sufficient in food production.

Answer: The United States has had unbroken diplomatic relations with Sao Tome/Principe since that country achieved its independence in 1975. Our U.S. Ambassador to Gabon is also accredited to Sao Tome. While the Sao Tome/Principe (STP) Government has close links with the Soviet Union, we want to explore ways in which STP will move towards a more balanced foreign policy and closer ties with the West.

In the context of our policy of promoting food production in Africa, A.I.D. has supported a modest agricultural project in Sao Tome/Principe. This project has been implemented by Trans Century, a reputable, experienced firm which has implemented a number of A.I.D. funded projects throughout the world.

The final A.I.D. funds for the Crop Production and Diversification project (658-0001) were obligated in FY 1981. It is scheduled for completion in May 1984 when the resident Trans Century Foundation contract technician will complete his assignment and depart. There are no plans to extend the project which has been addressing the problem of the chronic shortage of locally produced foods by increasing corn production. As is the case in many African countries this year, Sao Tome is suffering from the effects of the drought. High level STP officials have told our representatives on several occasions that the government appreciates the efforts of the U.S. to assist it in its efforts to increase local food production.

The Expertise of Lord Bauer

Question: Would you agree that Lord Peter Bauer, Professor at the London School of Economics, is one of the most eminent scholars in the world on the impact of foreign aid on development and the creation of wealth?

Answer: Lord Bauer is a widely known economist. He has written extensively on foreign aid and development and is clearly very knowledgeable about foreign assistance programs in a wide range of countries. It is also true that development is a complex process; that our knowledge of the process is incomplete; and that there exists within the economic profession differing views on the most effective approaches to specific development problems and constraints. While many economists may disagree with the specific analysis and conclusion contained in Lord Bauer's writing on development, he has raised important issues regarding the development process and the role of foreign aid and has stimulated further analysis of these important questions.

Question: Lord Bauer concludes that aid supports corruption, promotes socialism and hinders private enterprise. He also concludes that the less well-off countries would be much better off without aid. It seems to me, given the evidence that I have presented today, that Lord Bauer is correct and that his proposals to cut foreign aid should be applied to our own Agency for International Development. I can't think of one program that A.I.D. is involved in that is promoting private property and free enterprise. Can you supply me with evidence to the contrary?

Answer: While Lord Bauer's articles and publications on foreign assistance and development have identified and highlighted problems which have arisen in specific assistance programs and projects, we do not agree with his conclusion that developing countries would be better off without foreign economic assistance. The development process is both complex and long term. We have learned a great deal from both the successes and the failures of past development assistance efforts. Our programs and projects have evolved and changed in light of our experience and our increased understanding of the development process. This Administration has set forth a development assistance approach and strategy which we believe increases the overall developmental impact of our assistance and avoids or corrects many of the specific problems identified by Lord Bauer. This effort to increase the impact of our assistance and avoid the problems of the past is most dramatically seen in the emphasis which this Administration has placed in our assistance efforts

on (1) sound economic policy and policy reform in the developing world, (2) the increased reliance on market forces to allocate economic resources, and (3) the mobilization of private initiative and the private sector in the developing countries.

Furthermore, not only does our assistance program contribute to the long term development of the developing world, but by so doing it also serves a wide range of U.S. foreign policy, security, economic and humanitarian concerns and interests.

Insofar as your question on the promotion of private property and free enterprise by A.I.D., I am enclosing a copy of a study done by A.I.D. in support of the President's Task Force on International Private Enterprise.

AID Private Enterprise Policy Dialogue:
Forms, Experience and Lessons

Prepared for The President's Task Force on International
Private Enterprise by

Robert J. Muscat
February 28, 1984

Summary

This paper describes recent experience where AID helped expand the indigenous private sector by bringing about changes in policy. Usually the reasons behind policy change are numerous, there are many influences, and the process is not entirely discernible. We have tried to be scrupulous in identifying the AID role where clearly related to a policy change.

There are several vehicles for policy dialogue: Consultative Groups are donor clubs mainly chaired by the World Bank. These groups normally review a developing country's macro policies. Round Tables are similar to consultative groups but generally are for least developed countries. AID Programming processes are important occasions for policy discussion relating to proposed aid program content. Economic Assistance (such as balance of payment loans, cash grants,) are a basic vehicle for AID policy dialogue on economic policies affecting the private sector. AID experience with these vehicle goes back to the policy negotiations of the 1960s "program loans". Sector loans and food aid are important vehicles for dialogue relevant to the subject (agriculture, health, etc.) of these forms of aid. Projects also create occasion for dialogue on policies relevant to the activity in each case.

It is important to note that private sectors vary greatly among countries, from small-scale, informal, agricultural private sectors in lesser developed countries, to relatively advanced manufacturing and service sectors in the more advanced. The policy problems differ substantially along this spectrum; hence the dialogue takes quite different forms according to the situation.

Recent Dialogue Experience:

AID has had long continuous dialogue in Bangladesh on the role of the private sector. It has participated actively in the consultative group broader policy efforts, while focusing our attention on food, the policy framework for foodgrain prices and production inputs (mainly fertilizer), and the role of government agencies versus private enterprises in the marketing system. This dialogue has begun to yield results. Policy has shifted from government operations towards private dealers, with increased reliance on the operation of the market to achieve food price stabilization. AID focused on fertilizer distribution to bring private competition into play as a force that would result in faster expansion of fertilizer purchase by farmers. In the past year the government withdrew from retail fertilizer trade. The AID mission is now shifting the dialogue to the wholesale level, partially privatized, and the import

level. AID also got government agreement to deposit PL 480 local currency generation in private banks, the first time government deposited funds in private rather than government-owned banks. At the project level AID has begun to help strengthen the private rural financial system.

In the Sudan, general import assistance in 1980 brought AID into close relationship with the country's macroeconomic problems. Besides supporting an IMF World Bank dialogue, AID emphasized problems particularly important for the AID program. For example, the government agreed to hire a private management firm to run a new public sector sugar mill which was to get foreign exchange for equipment imports under the AID program. The government hired a Louisiana firm and allows the refinery to be run as if it were private, i.e. free of civil service or other interventions. At the project level, AID identified problems of river transport as critical to Sudanese agriculture. The government agreed to turn all boats and boating over to private owners and limit state functions to facility maintenance (e.g. docks), at which point the mission initiated an assistance project. Finally, seizing a "target of opportunity" occasioned with a big increase in the commodity import financing program, AID suggested the trade in oil imports be turned over to private companies on a bidding basis. The suggested privatization was accepted and purchase under the new system began this year.

The policy shift in Somalia toward privatization was sudden and more sweeping. As a result of the shift in Soviet support to Ethiopia and away from Somalia, the Somali economy was in shambles. Somali political and government leaders who had survived the Soviet period but doubted the wisdom of the country's previous economic course, regained control over policy and introduced an about-face. The basic shift made the government receptive to increased reliance on the private sector. Covenants in the AID agreement stipulated that government would divest itself of losing state enterprises. AID is also helping the government carry out divestiture through a technical assistance project. Somalia also agreed to change policy respecting private sector access to foreign exchange and ended the Livestock Ministry's monopoly on distribution of livestock drugs, opening this activity to the private sector (important because livestock is a major economic activity in Somalia).

Kenya has always been basically market-oriented. But the effects of the rise in oil prices, budget deficits, and policies of protectionism and state interventions (especially in grain marketing) led to a need for basic policy overhaul. An FY 1983 \$30 million AID Program Grant in support of a consultative group structural adjustment program describes the

agenda being supported, including aspects of special interest to AID, viz. "reduced government participation in parastatals...rationalization of GOK regulations and procedures to promote investment and exports...increased reliance on the private sector". To sustain dialogue, AID has regular informal monthly meetings with the Kenyan Government, and has sketched out the areas AID will focus on under the anticipated support of the next couple of years.

Individual Project Level: Several missions have begun projects to fund independent expert studies of policy issues relating to the private sector, thus setting the stage for subsequent dialogue. In Thailand, the policy study activity is built into a mechanism for regular policy dialogue between the government and the Thai private sector. Similar projects have been started in Panama, Philippines, Indonesia and Somalia.

AID's Housing Guarantee Authority has financed one of the longest running programs that uses the project as the basis for dialogue. During its first decade, the HG program helped introduce savings and loan systems in many Latin American countries, with combined assets now of roughly \$20 billion. Policies of an institutional, financial or regulatory character that have resulted in greater private sector participation in housing have resulted from HG dialogue in several countries, e.g. Honduras, Peru, Botswana, Tunisia.

AID has opportunities to encourage policy changes respecting the private sector through the way in which some projects are implemented. For example, in Zaire AID knew that the Ministry of Transport would not be able to maintain 200 kms of road within an AID area development program. AID proposed and the Zaire Government accepted the notion that a local private firm maintain these roads.

Conclusions:

The record shows a considerable level of policy dialogue in countries of varied political and economic character, involving varied styles and vehicles to suit the circumstances, and a fair degree (but not complete) success. The dramatic successes are where a government has undertaken a major reversal away from previous "socialist" strategy. A number of countries getting sizeable U.S. aid have been helped to strengthen the role of their private sector through policy dialogue and projects.

Generally speaking, AID needs to have a range of direct and indirect routes for dialogue; in some instances potential direct policy dialogue was curtailed because a political judgment was made that such discussion would have adverse effect on overall political/diplomatic relations. Further

thought should be given to those situations which require AID and State to optimize developmental and political interests, e.g. where the U.S. must balance medium-term development benefits resulting from a particular policy change against potential short-term irritation or negative effect on the diplomatic climate.

The amount and form of the AID program appears closely related to AID's ability to get a hearing and be taken seriously by developing country government policymakers. Also, while a substantial program effort by a group of donors is not sufficient to guarantee policy dialogue success, it does appear to be a necessary condition. AID's greatest prospects for effective policy impact appears to be when the policy framework is defined by the IMF/World Bank and the LDC Government. Then AID can then select particular policy areas for dialogue, financing, and other forms of assistance.

Successful dialogue needs to persuade those levels of a developing country government in a position to veto or block effective implementation. When lower levels are convinced of the need for change, agreement at the top is easier to reach. The benefits in having large numbers of Western-trained professionals in government and commerce cannot be overstated. Ultimately, what is most important and lasting is that a developing country have its own capacity to undertake the necessary policy analysis, dialogue with its private sector, and create a positive, dynamic environment for economic growth.

I. Introduction

This paper describes recent experiences in which AID attempted to help expand the indigenous private sector of a developing country by bringing about changes in the policy environment. The "policy environment" is comprised of the general development strategy and rhetoric of a government; the specifics of government acts and interventions (and laws); and regulations surrounding the investment and operations of individual firms in specific sectors or lines of business.

The paper identifies a number of examples of impact on policies affecting the role of the indigenous private sectors. In some instances, significant policy change experiences are not documented because the host government asked that for domestic political reasons, sensitive "understandings" not be recorded or described in project papers as actions being taken at the request or suggestion of AID; or, are not recorded except in cable traffic because the policy area was not directly relevant to any project or other AID activity calling for its recording in the normal course of business. The AID documentation record alone thus gives less than full account of the Agency's total experience or impact.

Agriculture has always been a major sector for AID and predecessor agencies. In many countries, in connection with large PL 480 programs and agriculture development projects, AID conducted dialogue with government regarding policies affecting individual farmers, who typically comprise the largest group of private operators in these economies. The record of this dialogue -- on such matters as the work of extension systems with the farmers, systems for training farmers in irrigated agriculture, etc. - is well known. This paper, however, focuses on the commercial and other functions of the private sector as provider of services (marketing, inputs, finance) to the farmers, and, on the private sector in industry and other economic areas.

In many situations the reasons behind a major policy change are numerous. There are many influences at work, and the process is often complex and not entirely discernible. In this paper there has been a substantial effort to identify those 'cause and effect' situations where AID's role as policy interlocutor clearly related to a subsequent policy change. Account is also taken of situations where the U.S. engaged in policy dialogue defined mainly by IBRD and/or the IMF. The U.S. added all its weight to the general influence of these institutions and a group of donors rather than took the lead. It is difficult to say whether the policy outcome would have been different in those cases where the U.S. played only a "me-too" role, or, if the general policy direction developed within a consultative group context would have emerged without the U.S. participation.

II. Modalities for "Policy Dialogue"

Depending on the size of the AID program, political relations with the country, and other factors identified below, AID may have opportunities to discuss aspects of the developing country's private sector policy framework. Before examining some of AID's actual experience, however, it will be helpful to describe various types of situations and the kind and scope of "policy dialogue" that may be appropriate to each.

A. Consortia. The U.S. is a member of many country consultative groups, chaired by the World Bank. By agreement between the developing country government (LDC) and the donor members, annual consortium meetings normally cover a wide range of macro-economic policy questions, based on documentation prepared by IBRD and the LDC. Donor countries normally look to IBRD to set and prepare the agenda. The opportunity is always present, and frequently taken, for donors to propose issues. The U.S. has done so often, using both formal and informal channels with IBRD (The AID desk officer to IBRD desk officer; the regional AID Assistant Administrator to IBRD regional Vice President). Often private sector policies are examined and discussed.

While consortia usually meet formally only once a year, some consortia have more or less formal standing groups comprised of donor officials resident in the country concerned. These standing groups met frequently, offering scope for continuing policy dialogue. (Some consortia have special sessions, devoted to a single policy area the donors want emphasized.)

In recent years consortia have served as the forum for discussion of broad policy direction, with fewer cases of sharply focused, issue-specific sessions. Their general direction has been towards trade liberalization and market-orientation, providing a useful backdrop for AID in pursuing particular policies affecting the local private sector. For many specific matters, consortia are not the appropriate bodies for dialogue, either because they are more useful serving as the means to require an LDC government to lay out its broad strategy, or, because the issues involved may be too sensitive for formal airing.

AID recently (November, 1983) reviewed its consortia experience and concluded that the discussions were too vague and general. Nonetheless, the consortia mechanism can be particularly helpful in situations where; a) a government has strong reservations regarding liberalization, b) political considerations led the U.S. to conclude that bilateral dialogue on basic policy change would not be productive or helpful for U.S. relations with the government, or c) where the public record of consortia recommendations would be helpful to the LDC

government in dealing with its own public opinion. (If AID decides to strengthen the policy dialogue aspect of the consortia process, shifting toward greater scope for the private sector could be a particularly appropriate subject.

B. Round Tables. These were developed by the United Nations Development Programme (UNDP) over the past couple of years to be the equivalent of donor coordination mechanisms for the Least Developed Countries. Round Tables have served thus far to assist the Least Developed Countries organize, and present to donors their project financing needs. (These meetings could be developed further in the direction of policy coverage and broad review of development progress and strategy.)

C. AID Programming. Often in connection with the preparation of a long term country development strategy (CDSS), AID missions have opportunities for broad policy reviews with the LDC government. These can be occasions for discussion of AID's views with respect to the role of the private sector in the country's development and the policy framework. The extent and success of such discussions depends on the size and relative importance of the AID program, the project content of the program at the time, and the volume of expected future year funding, and, the Mission's judgment as to the relative importance to the LDC government of private sector policy questions compared with other issues.

This latter factor is an important general point. In many countries governments maintain a market-oriented, private-sector oriented development strategy. In such cases, policy dialogue may achieve its "optimal" usefulness by concentrating on related problem areas, perhaps covering specific issues related to the private enterprise environment, e.g. institutional weaknesses in government-private sector relations, or export quality control, or credit for small and medium enterprises. In other countries the government may have strong reservations--if not hostility--towards private business; policy dialogue might then usefully focus on fundamental attitudes, or might have to be limited to incremental improvements, inducing greater investment activity or more efficient and productive private sector activity. In still other cases, barriers to entry of foreign private investment may be most important; in still other situations, complex relationships between government and private interests (having little to do with ideology) may pose serious obstacles to efficiency and competition.

Often these problems are complex and fraught with sensitive political ramifications. The ability of AID to conduct meaningful policy discussions will depend on the experience and credentials of the Mission Director and on the quality of staff work the Mission and AID/Washington performs to develop the U.S. position.

D. Balance of Payments Loans and Grants. Cash grants, Commodity Import Program (CIP) loans and other forms of general economic assistance ("program" aid) have long formed the basic vehicle for general policy dialogue. Going back to the highly conditioned 1960s style of program lending, with tranching releases keyed to meeting quantitative fiscal and monetary targets (often as defined by the IMF), this format for policy dialogue has been the most closely evaluated of all such vehicles, with mixed results.

Where such aid has been provided in conjunction with similar loan funds from the World Bank to help finance structural adjustment, the economic elements of the package usually include trade regime, exchange rate and other policies fundamental to improve the climate and incentive structure for private sector efficiency and export competitiveness. Usually these situations require deflation of domestic demand and reductions in public sector subsidies and other contributors to deficit financing. These policy approaches often impose severe strains on private enterprises facing contractions of their local markets. As noted above, the extent to which private sector policies, per se, are the subject of structural adjustment agenda varies from case to case.

E. The Sector Loan. This has been the most pointed aid instrument for policy dialogue. Initially, sector loans for imports needed by private manufacturing concerns (raw materials and intermediate manufactures) provided both direct resource assistance to the private sector and the occasion for discussion of relevant policy issues. (Program loans were used in a similar fashion.) In recent years it has been used largely for health and agriculture. Food aid under PL 480 has traditionally been treated as a sector loan in agriculture, involving attention to agriculture policy problems, which sometimes included questions concerning the role of the private sector in the marketing of inputs and produce, and other private sector issues.

F. Projects. In most countries the AID program is not large enough itself to create occasions for dialogue on broad, private sector development strategy. Occasions do arise where issues of specific institutional, regulatory, or other policy nature are pertinent to the planning or implementation of individual projects, and where the AID Mission can raise such questions with government. These are as follows:

- 1 Projects under which technical assistance is provided precisely to study and help the government develop strengthened policies regarding the private sector.

- 2 Where the usefulness of the project depends on the government taking decisions to alter some existing, unfavorable

policies. In the case of larger scale capital projects, these changes may be formally identified as conditions precedent to project financing.

3 When a problem arises during project implementation that was not anticipated during the planning phase, reflecting some unfavorable aspect of the policy environment for the private sector participants.

4 Where implementation of the project carries a change favorable to private enterprise, even if the purpose and content of the project is not inherently private sector oriented.

Before turning to AID's record and illustrations of policy dialogue approaches, a few observations are worth setting out as a reminder to the reader to avoid oversimplified conclusions:

First, this survey is limited to the private, indigenous, profit-making enterprise sector, excluding small farms. AID has been heavily involved in this latter area for a long time and thus the new private sector emphasis complements earlier attention in the sector. Also excluded is the private not-for-profit PVO sector, with which AID has also had extensive working relations.

Second, as an analytic category or a subject for policy and program attention, the private sector (even as above defined) is very heterogeneous and varied. This is immediately apparent if one compares the advanced state of commerce, international trade, and domestic manufacturing (and the role of private enterprise in these activities) in India, Thailand, Colombia, with countries like Nepal or the countries of the Sahel. In the former case the private sectors have long histories, well developed interest-group associations, numerous enterprises of relatively large scale and capitalization, a large cadre of people trained in modern management techniques, and ample supplies of entrepreneurs. These conditions do not exist in the latter cases. (The institutional and policy problems differ substantially across this wide spectrum.)

Third, some policy issues require more analytic sorting out than AID or the US Government is able to accomplish. Taking a position that initially seems sensible but turns out wrong is counter-productive - if the LDC government took the advice and the results were harmful, the U.S. relationship would be damaged, not to mention the setback to the country's development. Particularly troublesome is the common problem within the private sector that policies favorable to one group of enterprises are harmful to another (e.g. where infant-industry policies protect some enterprises by shutting out other entrepreneurs).

Fourth, policy impact evaluation after the fact is much more difficult than project evaluation. For one thing, AID is often not the only (or most important) party to policy discussion with the government. In some situations an external donor only helps achieve a policy improvement that elements within the LDC government have already formulated. The "dialogue" serves as part of the policy process rather than as initiator. Another obvious complication is the time at which an evaluation is undertaken. A changing world and domestic economic environment may turn a previously good policy into an irrelevant or inappropriate one. Finally there is the general problem of evaluating the effects of specific policy changes: Were we right? Did the change achieve the expected result? In other words, the operation may have been a success, but the economic patient died anyway, from other causes.

III - Recent Dialogue Experiences: Different Modalities

A Full-Scale Agenda Experience

In reviewing policy dialogue experience, we begin with cases where dialogue has been the most extensive.

1. Bangladesh. Bangladesh is one of the countries with which AID has had a long continuous dialogue, and there is still the same general area of concern regarding the role of the private sector. The dialogue has been carried on in the context of consortia meetings, food aid, development assistance import financing, and individual projects. It has focused on the food sector, in particular foodgrain prices and production inputs (mainly fertilizer), and the role of government agencies versus private enterprises in marketing systems.

Since independence in 1971, successive Bangladesh governments have had to work with an inherited system of government control and operation of the food distribution system. They were strongly inclined to continue an extensive command system in the food sector, especially since the availability and pricing of foodgrains were seen as central to the country's politics. The system was both inefficient and a drain on government resources. Food system reforms were part of the general policy agenda on which the World Bank worked. They defined recommendations which were then supported by the many donors regularly attending the consortium meetings and frequent in-country dialogue sessions.

Apart from US participation in the general dialogue of the consortium, the AID Mission for several years had worked with the Government of Bangladesh on food policy problems of particular importance and interest to the US. These were in much greater detail and with much greater frequency of discussion than those pursued in the consortium context. After several years of AID analysis and the exercise of considerable diplomacy, the effort has begun to yield results. Some policy changes entail major reductions of direct government operations in favor of private dealers and merchants, and increased reliance on the operation of the market to achieve foodgrain price stabilization. AID focused the dialogue on the fertilizer distribution system to bring private competition into play to stimulate rapid expansion of fertilizer purchases by farmers. In the past year the Bangladesh Government has withdrawn itself entirely from fertilizer sales at the retail level, leaving the field to private dealers. AID is now shifting the policy dialogue to the wholesale level, already partially privatized, and the import level.

The Bangladesh Government has also begun a divestiture program, starting with large segments of the jute and cotton milling industry. A number of plants nationalized by an earlier government have been turned back to private ownership. (While the World Bank took the lead on this subject, the US supported this policy discussion in the consortium context.)

Another interesting policy change agreed to by the Bangladesh Government is that a portion of PL 480 local currency generation can now be deposited in private commercial banks. This represents the first occasion in which government funds are placed in private banks rather than government-owned banks, thereby increasing the resources available to these private institutions. (The decision is consistent with the broader policy the government introduced in 1983 to begin denationalization of commercial banks and allow establishment of new private banks.)

At the project level, AID recently begun to supplement its work on food production through an effort to help expand and strengthen the rural financing system. Based on an earlier experimental effort, AID negotiated a project in May 1983 requiring several reforms that will, among other things, strengthen the role of the private rural financing system. (The project contains provisions for future policy dialogue, as necessary.)

Finally, it is worth underscoring how remarkable the entire Bangladesh policy movement of the past two years has been. The shift toward a greater economic role for the private sector in such fundamental activities as food production, distribution and finance, incorporating many of the policy changes donors had been urging for years, represents a sharp departure from past economic philosophy. The decision was taken at a time of considerable economic stress and recession, by a government that was apparently reluctant and uncertain of the outcome. The role and impact of the policy negotiation process, both in terms of broad policy thrust and many detailed particulars, appears direct and unambiguous.

During this same period, AID in three African countries was engaged in similar across-the-board policy dialogues. They involved different aid modalities, and also helping to bring about significant policy change. These reflect differences in nuance and style to the Bangladesh situation, or for that matter, the "classic" policy conditioning approach of AID's balance-of-payments "program loans" in Latin America in the 1960s.

2. Sudan

In the case of Sudan, the initiation of a general commodity import program (CIP) in 1980 brought AID into close relationship with the country's macroeconomic problems. To understand the situation and identify the major policy problems AID might respond to, two noted U.S. economists reviewed Sudanese economic conditions. Both concluded that greater reliance on the private sector was essential to address a) the country's resource mobilization needs, and b) severe inefficiencies plaguing the transport, manufacturing and other sectors, heavily dominated by parastatal organizations.

Like the Bangladesh case, in addition to supporting IMF/IBRD dialogue AID emphasized certain policy areas that appeared particularly important and appropriate. The CIP allocation process gave AID entry into related subjects where dialogue with the Government might be productive. For example, despite the poor record of small government-run sugar mills, the Sudanese Government had decided to establish a large new refinery. Because the new company needed access to import financing for its equipment under the CIP program, the Government accepted AID's recommendation that a private management firm be hired to run the plant. A Louisiana firm was hired and ran the refinery as if the refinery were a private company, e.g. free of civil service, pricing or other government interventions.

At the project level, AID identified river transport problems as critical to Sudanese agriculture. Following three years of discussion, the Government agreed to turn all boats and boating over to private owners, and limit State functions to facility maintenance (dredging, docks, etc.) With that commitment AID initiated an assistance project.

The Sudanese experience is particularly interesting in light of recent AID actions in that country. AID took advantage of a "target of opportunity", provided by the sizeable increase in the FY 1984 CIP program to \$120 million, compared with \$80 million in FY 1983. This increase made AID a significant source of financing for Sudanese petroleum imports. Oil importing and distribution had been reserved to an inefficient State enterprise. AID suggested to the Sudanese Government (and other donors providing import financing), that petroleum import and distribution should be done by private oil companies, on a competitive bidding basis. The suggested "privatization" was accepted and purchase under the new system began this year.

3. Somalia

Compared with the evolving change in the Sudan, the policy shift in Somalia was sudden and more sweeping. Somali leaders faced an economy in shambles when the Soviets switched to support Ethiopia, withdrawing their assistance as well. Somalis who had survived the Soviet period but doubted the previous economic course, regained control over economic policy and introduced an about-face. The U.S. base agreement and the increase in the AID program (including ESF general import financing), set the stage for an active AID role and policy dialogue. The basic policy shift made the government receptive to the specifics of increased reliance on the private sector. AID dialogue requirements, for example, were expressed in covenants in the CIP Agreement. They included commitments the government would divest itself of losing state enterprises. AID helped the Somali Government carry out divestiture through a technical assistance project that is now providing IESC expertise to analyze individual parastatals and prepare divestiture plans (when the Government first offered to sell off industrial parastatals a couple of years ago, there were no interested takers). The U.S.-Somali CIP program also opened the door to policy change with respect to private sector access to foreign exchange.

At the sub-sectoral project level, AID persuaded the Government (contrary to its Ministry of Livestock) to end the Ministry's monopoly on the import and distribution of livestock drugs, opening this activity to the private sector. With livestock raising and export the most important single economic activity in Somalia, livestock drug distribution is not a minor detail. This decision led to a request from the Livestock Ministry for assistance to help it and the private sector function under the changed policy. The policy change recommended by AID, in favor of "privatization" on efficiency grounds, was accepted on its merits by the Government, with a facilitating project coming only after the policy change.

The prospect for a more private-sector, market-oriented development strategy survived the previous policy because numerous Somali officials had been educated in the West. This is recognized by the Government; participant training abroad has now switched back to the West; officials educated in the Soviet Union are now being retrained in Western countries.

4. Kenya

A third example of policy dialogue associated with a broad policy change agenda worked out between the LDC government and the World Bank is the case of Kenya. Kenyan development strategy has always been basically market-oriented with major reliance on the private sector. By the late 1970s however, the effects of the rise in oil prices, mounting public sector

deficits, and previous policies of protectionism and selected state intervention (especially in grain marketing), led to a need for basic overhaul of the policy framework. In 1978/79 AID proposed that its program be associated with the structural adjustment program defined by the Kenyan Government with IBRD assistance. This was done, and is reflected in a FY 1983 \$30 million AID Program Grant supporting the structural adjustment program. AID documentation spells out formally the policy agenda supported by the assistance, referring in so many words to U.S. policy dialogue with the government of Kenya (GOK). This includes private sector aspects of the adjustment program of special interest to AID, such as "reduced Government participation in parastatals.... rationalization of GOK regulations and procedures to promote investment and exports..... increased reliance on the private sector to achieve development objectives."

Beyond the statement of broad policy objectives, the Agreement contains "conditions", some of which are taken from specifics of the IMF stand-by and IBRD Structural Adjustment Loan understandings, and some are AID-specific. These have to do with export promotion (simplification of export control procedures), and liberalization of imports of agricultural inputs (easing access to foreign exchange licenses for private importers), all of which are beneficial to the private sector. To sustain the dialogue AID has instituted a system, informal but regular monthly progress reviews, and has also sketched out for the Kenyan Government areas of the adjustment process AID will focus on under anticipated import financing support over the next few years. Finally, the package includes \$2.0 million to finance consultants to assist the Kenyans define the details of several policy aspects of the adjustment program, including parastatal policy. A portion of these funds are also to be used to evaluate the results under the FY 1983 Agreement, and, to help define the policy content of the expected FY 1984 Agreement.

B. Informal Policy Dialogue Experience

Sri Lanka is an unusual case of a country that recently made an about face in economic philosophy through elections. The new government is convinced Sri Lanka should move sharply away from heavy state intervention, and, rely on the private sector and the operations of the market. The impetus for fundamental change in economic strategy appears to have arisen from within Sri Lankan Government and political circles, not from international institutions or donor pressure.

Nonetheless, AID policy dialogue in the 1980s led to a significant changes that affected the private sector. This is generally unrecorded, however, because the dialogue was completely informal and unconnected with conventional AID

activity. The Sri Lankan Government was seeking to develop alternative approaches to food subsidy policies inherited from the previous government. The AID staff in Sri Lanka brought to their attention the U.S. food stamp system, which relies on private retail food stores, rather than government distribution agencies. Discussion about the merits of the U.S. approach led Sri Lankan officials to visit the U.S. on their own and observe the workings of the food stamp system. The government subsequently shifted physical rationing traditionally handled through government distribution, to a stamp allocation system run through the private retail food distribution system.

C. Individual Project Level Experience

1 Projects Which Address Policy Issues

In the last couple of years, several AID Missions have developed projects which finance independent, expert studies of policy issues relating to the private sector. While development of the projects themselves does not involve substantive policy dialogue, agreement for such a project sets the stage for future dialogue. It also indicates an LDC's recognition that its private sector policies could benefit from change. The existence of such a project clearly implies general agreement between the LDC Government and AID about the basic economic philosophy guiding the country's development; the studies are then designed to facilitate progress in the agreed direction.

In Thailand an AID policy study activity is built into a mechanism the government established shortly before the project design exercise, to facilitate systematic policy dialogue between the Government and the Thai private sector. Studies are designed to strengthen the technical quality of this dialogue. (With variations appropriate to the local circumstances, similar private sector policy study projects have been started in Panama, Philippines, Indonesia, and Somalia.)

2 Policy dialogue as a result of projects

a Housing Guarantee

AID's Housing Guarantee Authority (HG) is one of the longest running programs using the project as the basis for policy dialogue affecting the relative roles of government and the private sector. HG deals with important policy aspects of urban development, the introduction of new institutions, and adoption of appropriate regulations required to support a shift toward a greater private sector role. For various reasons, including its legislative mandate and because it is funded with private U.S. financing, the HG program has been highly

conditioned. Since most LDCs initially lack any history of private institutional housing finance, interest rate and other policies that could support a viable private housing finance system, this greater conditionality has been more readily accepted.

During the first decade of the HG program it was confined to Latin America. HG introduced and helped establish savings and loan systems in many Latin countries, now having combined assets of roughly \$20 billion. More recently Western Hemisphere projects have focused on policy dialogue leading to legal changes regarding low-income shelter, especially slum legalization (Honduras and Peru) and upgrading. The requirement that beneficiaries of HG financed projects be below the country's median income has frequently occasioned dialogue i.e. such as that in Honduras, which resulted in a lowering of municipal construction standards. (Higher standards kept publicly financed housing too expensive for the lower income levels.) In Honduras lower income families now have access to 70 percent of public housing finance compared to virtually zero a decade ago. (Greater private sector financial and construction participation in housing has resulted from HG program dialogue in recent years in a number of other countries, including Ecuador, Panama, Botswana, Tunisia.)

The HG experience is interesting and unusual in the context of foreign assistance. Although it has occasionally been "programmed" along with other aid accounts as part of an overall U.S. package, the HG program has normally pursued a relatively independent path. This has been explained by its need to negotiate particular conditions under which its projects must be implemented, and by its particular financial character. Its policy negotiation experience has also been distinct because it often negotiates directly with municipal rather than central governments. This tends to limit the impact of disagreement. For example, a failure of negotiations with the city Government of Seoul is less likely to have a major impact on overall U.S.-Korean relations than failure at the national level.

HG program ability to negotiate policy change has been enhanced by its regular practice of undertaking a housing sector study before defining the ground rules for an initial project (and occasionally thereafter). In most cases these studies have been innovations that have defined the problems of the sector, especially that segment the HG would consider financing. The result has been to put on the table the policy issues identified by expert analysis.

b Project Specific Cases

Even if a project purpose has little to do with encouragement of the private sector, AID can encourage private policy by its implementation approach. In Thailand AID helped finance construction of over 5,000 small bridges and culverts. The bridges and culverts were the weakest links in the Thai "highway" system at that time. (Up to that point all public works were constructed by Government.) AID convinced the Thai Government that this project should be implemented by private contractors although the indigenous private construction sector had no experience, in this type of construction. Further, the private construction sector consisted of a small number of small firms.

Initially construction activities by these small contractors was overseen by an engineering consultant firm under close supervision by the AID Mission project engineer. After several years, the local construction industry was comprised of over 75 firms with public works construction capability developed substantially under this project. When AID began a major highway reconstruction project in the early 1960s, the bridge contractors were helped to increase their capabilities further, and awarded contracts for short stretches of highway. Again, they operated under supervision of an engineering consultant firm responsible for overall design and implementation of the complete highway.

Thus, while the purpose of these projects were to improve transportation, an important accomplishment was the creation of a substantial private sector civil works industry. The key was a change in Thai Government policy respecting the relative roles of government and private entities, a change brought about by AID. This case reflects the natural inclination of Americans to look to the private sector for the bulk of economic activity, has long been part of the "culture" of the U.S. development program, even during periods when encouragement of the private sector was not a deliberate priority.

There are many other cases in recent years of AID use of private contractors for civil construction projects. For example, in Zaire AID was aware the Ministry of Transport would not be able to maintain the 200 kilometers of road within an AID area development program. AID proposed an arrangement with a local joint venture firm under which the private firm would maintain these roads. (AID provided technical assistance to enable the firm to take on this additional, normally public road maintenance responsibility.)

The Thai and Zaire cases are similar in that an AID initiative led to LDC government agreement to relax previous policies under which road maintenance was strictly a public sector responsibility. In both cases, the AID policy contribution came at a time when expanding civil works requirements faced severe public sector capacity constraints, in effect creating the need and opportunity for a private sector option. Such implementation cases are far more numerous than this exercise describes. Many did not involve changes in formal policy and may not have a negotiating character to be identified as such in AID documentation.

Finally, to provide the reader with some sense of the range of private sector policy issues AID is involved in, below are a few illustrations:

- transfer of public tubewells to private ownership-(Pakistan)
- private sector distribution of contraceptives-(Pakistan, Nepal)
- divestiture of public companies-(Pakistan, Nepal)
- private sector marketing of agriculture produce and/or inputs-(Senegal, Pakistan, Mali, Zambia, Guyana)

IV. Conclusions

The record reflects considerable policy dialogue, in varied political and economic environments, involving different styles and modalities to suit local circumstances, and a fair degree of success, including cases of substantial policy change. The dramatic cases are those where a government undertook a major reversal away from a previous "socialist" strategy. The less dramatic, e.g. the absence of highly visible strategy dialogue in major LDCs such as Thailand or Indonesia, does not reflect less AID intent or interest in the role of the private sector. Often the country's development strategy already contains market-oriented, private sector components and the issues are more subtle, perhaps more technical and administrative, and best shaped for dialogue through the policy-project approach.

At the same time, there are numerous countries, especially in Africa, where development is being hampered seriously by state intervention, inefficient parastatal monopolies, and the absence of encouragement or outright negative attitude of government toward the private sector. In many instances AID does not appear to have achieved much in the way of policy change. This review has not attempted to make the connection between the need for policy reform and where AID has expended most of its policy reform efforts. It is clear, however, that a number of countries receiving substantial AID funding have also been assisted to shift toward and/or strengthen the role of their private sectors. While the pursuit of an economic philosophy with fundamental similarities to that of the U.S. does not guarantee a country will consistently pursue a foreign policy of positive relations with the U.S., it is much more likely to create the basis for such a predisposition than adherence to an economic strategy suspicious or hostile to the private sector.

One does find an important example (Egypt) where a large assistance program involving several modalities has not been sufficient to significantly affect policy. While the basic orientation of Egypt is favorable to private enterprise, the Government reflecting the legacy of socialism tends to overregulate and overcontrol the economy. Nor does there appear to be cases where AID has had major policy dialogue with only a minor-sized U.S. aid program, apart from the role AID may have played as part of a consortium. The spectrum of countries and policy-dialogue situations tends to result in the following, not surprising mix: In countries where the U.S. has relatively minor interests and involvement, the U.S. relies on the multilateral development banks to take the lead in policy dialogue; in countries of somewhat greater interest the U.S. takes a leading role in the consortium; and where there is great U.S. Government interest AID often independently conducts policy dialogue. Depending on the politics of each case, the skills the U.S. is able to bring to bear, and the roles of other multilateral and bilateral donors, the potential nature and style of the policy dialogue varies. The substantial resources and analytic capabilities of the international

financial institutions, the varying interest and influence (where coordinated) of other donors in different countries, all greatly augment the AID bilateral policy dialogue capabilities and influence.

Generally speaking, it is clearly important to have a range of direct and indirect policy dialogue routes. One reason is that in some instances potential or incipient independent private sector dialogue may be curtailed because of a U.S. political/diplomatic judgment that dialogue would have short term adverse effects. AID has apparently encountered many different forms of this situation. In one case the whole subject was deemed too sensitive for a "forward" position beyond low-key concurrence with IBRD. In another, the specifics were judged too political for AID involvement beyond informal conversation. In another, AID was able to press on very sensitive policy issues, pertinent to general import/financing despite some Washington held views that political relationships might be upset. This was because the Ambassador saw the situation differently, and felt the economic issues at stake were worth the short-run risks. In other cases, the combination of strong LDC government suspicion of the private sector and high U.S. political interest (particularly in conjunction with a small AID program), led to the conclusion that private sector policy dialogue was neither in the U.S. interest nor likely to succeed.

Further thought needs to be given in terms of how AID and State could optimize the decision-process. One area is where the medium term development impact potential is positive but balanced against possible short-run irritation or negative effects in the diplomatic climate or general political/security relationships.

Under what circumstances has AID been able to bring about major policy change affecting the private sector?

In general, the amount and form of the AID program appears closely related to AID's ability to get a hearing and be taken seriously by government policy-makers. Also, while a substantial program among the group of donors is not a sufficient condition to guarantee such dialogue efforts bearing fruit, it does appear to be a necessary condition. The ability to affect policy (or "leverage", where the initial disagreements are strong), however, does not automatically flow from having a large program.

It is striking that in the cases described above (where we were looking only at private sector policy dialogue) a key characteristic of AID's earlier experiences is repeated, namely that both donor and recipient accept the suitability of dialogue (or tough negotiation) on a range of subjects that

appear connected with the form in which the aid was being provided. The modalities and the project content play an important role in determining what can be raised for dialogue without surprise on either side, with size being a separate dimension. (We are not dealing here with resentment some countries express over the substance of the conditions being negotiated, or over the power relations reflected in the position in which they find themselves, or the rigidity or heavy-handedness they perceive on the donor side and the distinctions normally accepted without protest as to what kinds of subjects are on the table depending on what kinds of money is on the table.)

The amount of the resources AID provides, relevant to the problems being addressed, is a kind of "necessary" condition to establish U.S. seriousness about the issues we want to discuss. What level of assistance adds up to "seriousness" in any case is a matter of perception by both parties, and cannot be quantified as a generality. With regard to form, it is important to note the lesson of the Kenyan experience in 1983 whereby the economic value of the program assistance (and hence usefulness of the funds to the Kenyan economic authorities) was significantly enhanced by the early timing and quick-disbursing character of the grant. Where AID is in a position to provide funds in a manner that gives the monetary authorities the foreign exchange liquidity needed to meet immediate needs, especially related to adherence to IMF conditions under a time-table, such funds have a "value" greater than their mere size. In short, form and timing are important attributes of aid in addition to amount, and properly brought into play, can enhance AID's dialogue credentials and chances of reaching mutually acceptable understandings.

The personal contacts and confidence that a resident AID Mission can build up offer AID important opportunities for policy dialogue. It is necessary to have something useful to say; the presence of policy-analysis staff and the use of expert and well-known consultants are key factors.

In many instances the general drift of government policy is a key factor. The most significant achievements cited above were in countries where the government was in transition, and where AID was able to quickly help define new main lines of private sector policy, or speed adoption of specific approaches the new government was willing to accept assistance to bring about. In some instances, AID found itself able to help effect more rapid policy change by strengthening the hand of the finance or planning authorities in internal debate within the government, with other reluctant ministries, as to the pace and nature of the change involved.

The 1980s appear to be a period in which many LDCs are swinging back from the socialist or state capitalism policy preferences of the 1960s and 1970s, to more market-oriented philosophies. AID's negotiating style, as reflected in the documentation reviewed, is very suitable for the 1980s, more than the 1960s and 1970s. For example, present approaches do not heighten intergovernmental tension by explicitly and frequently (sometimes quarterly) requiring the LDC government to appear at bilateral, formal reviews to be interrogated about performance "targets" and aid doled out in "tranches" (or withheld). The question of opportunity and right circumstances is more likely now to hinge on program content, whether it leads "naturally" to acceptable policy exchange, and whether the staff on the ground have the credentials and skill to conduct "development diplomacy".

Dialogue at What Levels?

In many if not most AID countries, decision-making is very centralized; cabinet-level decisions are often required for matters that strike Americans as not important enough to warrant the personal attention of the head of state. As some of the examples indicate, however, it does not follow that the most effective approach for policy dialogue is "top-down", assuming agreement on a policy change with the most senior ministerial levels assures implementation. Aspects of experiences in Bangladesh, Pakistan and Kenya illustrate that agreement at the top, even if embodied in formal understandings, can readily be followed by delay in implementation, or even continuing uncertainty as to whether the understandings will in fact be adhered to. In some cases delay, or difficulty in reaching policy agreement, stems from resistance in other layers or branches of the public sector. (Much of what would be labeled "political" difficulties is found within government bureaucracy, particularly in statist systems or one-party parliamentary systems.) Successful policy dialogue needs to persuade varied levels of government in position to interpose a veto or block effective implementation.

The converse is also true, as the Somalia case demonstrates: When lower government levels are convinced of the need for a policy change, agreement at the top can be reached quickly following major political changes. The long-run development impact in having large numbers of well-trained, Western-trained professionals in government (and commerce) is enormous.

Over What Policies?

The key policy areas respecting the role of the private sector that figure in the experiences reviewed, are: a) the basic governmental public/private sector orientation; b) extent

of government intervention in agricultural marketing; c) parastatal competition or monopoly; d) import and foreign exchange licensing and allocation; e) protectionist import substitution vs. export orientation; f) credit and interest rates; g) government-private sector dialogue processes.

AID's ability to move an LDC government away from a fundamental statist or collectivist strategic preference is very limited. The domestic political roots (with or without a foreign policy overlay) are often too deep for any reorientation simply because external resources may be made available. Nonetheless, demonstration of private sector approaches may be possible even where the economic philosophy is extreme, as in Burma with AID's involvement in oil seeds marketing. In this case a parastatal monopoly is being reduced to make room for marketing by cooperatives. (This is a modest step, but if successful, in Burmese policy terms it could lead to further relaxation of the extreme centralism of economic activity.)

In most cases AID cannot apply resources sufficient to be the leading interlocutor on major macroeconomic framework issues that affect the private sector in powerful ways (e.g. foreign exchange rates, trade regimes). These issues are better left to the World Bank and IMF for leadership, as has been the case in the situations examined. (U.S. support of IBRD/IMF is important.) AID's greatest prospective for semi-independent effective policy dialogue appears to be when AID aligns itself with financing in support of a significant policy shift, and, where the framework defining the dialogue between the LDC government and IBRD/IMF leaves significant policy areas still to be worked out, or to be defined operationally. The policy agenda is set through the combination of AID's having a significant seat at the consortium table and AID choosing the specific items to carry further.

A basic observation can be made with respect to the kinds of private enterprises, and therefore the kinds of issues AID deals with. In most African countries agriculture is the largest sector of economic activity, and the private sector is comprised mainly of firms or self-employed entrepreneurs which deal in agricultural marketing, small-scale transport, and small- or medium-scale manufacturing for the small urban market. The so-called non-formal, private sector is also a major element of the private economy. Thus, marketing, pricing and credit policies are most important and most frequent among the subjects AID discusses in these economies. In Latin American and Asian countries where the manufacturing sector is more developed, and where transition from import substitution to export orientation is the main dialogue framework, the most important issues for AID are those concerning import and exchange policies, parastatals, as well as the institutional basis and processes for LDC government-private sector dialogue.

At the statist end of the spectrum, there is a basic distinction between countries embarked on "socialist" development because of its relationship to political processes and objectives, and those countries relying on State initiative because of the weakness of the domestic private sector and the absence of an indigenous tradition of commercial entrepreneurship. Among the latter set of countries, and in a small number of cases among the former, there has been a significant shift in recent years towards greater pragmatism and encouragement of private expansion. This has been due to the recognition that state enterprise performance has been disappointing, which has been focused on by external aid agencies and the IMF.

Once a government is prepared to shift away from extensive government operations and intervention, the policy changes required are often easy to identify. Greater reliance on the private sector parallels movement toward greater economic efficiency in resource allocation and enterprise management, and in the substitution of market forces for government economic management.

At the other end of the spectrum, in the numerous cases where there is reliance on the private sector but the alliance of political and economic interests has resulted in systems highly distorted and non-competitive (if not corrupt), policy reform has a different character. Reliance on private ownership and operation of commercial and industrial enterprises, and the development of systems of political freedom and democratic power-decentralization with enduring natural association with the "Western" democracies, are undermined in such situations, posing both political and developmental problems.

In conclusion, while AID has most of the elements of comprehensive policy dialogue guidance, it has not drawn them together in a concise "how-to" handbook. It would be hard to do because, as the AID policy paper on "Policy Dialogue" (ref. 8) points out, it would be artificial to try to write a cookbook applicable to every set of ingredients, because no dialogue takes place unless two parties disagree on something at the start. In the long run what is most important is that the country reaches a position where it has the institutional capacity to undertake its own policy analysis, and sustain processes through which the private sector and government maintain regular domestic dialogue for an airing of their different perspectives and interests, hopefully in a climate conducive to outcomes that promote development rather than mere confrontation.

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NATIONAL SECURITY AND INTERNATIONAL AFFAIRS

THURSDAY, FEBRUARY 23, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 9:43 a.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Chiles, Biden, and Sasser.

Staff present: Stephen Bell, staff director; Charles Flickner, senior analyst for international security and international affairs; and Paul Heilig, analyst for national security.

For the minority: Richard N. Brandon, staff director; and Doug Cook, senior analyst for defense.

OPENING STATEMENT OF CHAIRMAN DOMENICI

Chairman DOMENICI. Gentlemen, on behalf of the committee I am pleased to welcome you here this morning. The purpose of this panel is to receive your expert views on the President's budget request for national defense and especially to receive your views on the impact on our national defense of major reductions in the President's fiscal year 1985 requested defense increase.

In order to look at the various aspects of this problem, we invited a defense panel of three distinguished individuals with significantly differing backgrounds and areas of expertise. Unfortunately, Gen. W. Y. Smith (retired), currently a visiting scholar at the Woodrow Wilson Center for Public Policy, is ill this morning and cannot be present. Since it is too late to get a replacement for General Smith, we will proceed with the two remaining witnesses. General Smith's statement will be put in the record.¹

Mr. Lee Rice is currently president of the Shipbuilders Council of America. Prior to that, he had a successful career as president of the Avondale Shipyards, Inc. Mr. Rice will be able to discuss the defense budget from the industrial point of view. All of us are interested in hearing your views on spare parts, warranties, and the other defense procurement issues currently in the news.

Finally, we are also pleased to have Dr. Josh Epstein from the Brookings Institution. Dr. Epstein is a noted scholar who has written about a number of national security issues, with particular emphasis on the Soviet Union. Today he will offer his views about the

¹ See p. 350.

defense strategy that is embodied in the President's request. We look forward to hearing those views.

The two witnesses we have this morning will give us their views on the impact of reductions in the defense budget. This afternoon the Joint Chiefs of Staff will give us an idea how these reductions will impact the Soviet/U.S. balance-of-forces equation for the foreseeable future. The committee will also hear Chairman Tower's views and, later, another version of the "Spinney briefing."

As we proceed through the hearing process for the fiscal year 1985 budget, I would point out that we are engaged in an effort to build a consensus on a deficit reduction plan. Absent such a plan, we are going to face very tough negotiations in order to get a budget resolution, and will do so under serious time pressure.

With the abbreviated schedule planned for this session, I think the time is approaching for a serious effort toward a solution to the deficit problem.

We are very much appreciative of the witnesses who are here, and we will proceed with Mr. Lee Rice, the president of the Shipbuilders Council of America, and then, Dr. Joshua M. Epstein, a Rockefeller foundation fellow and guest scholar at Brookings, in that order.

Senator Biden, did you have any comments?

Senator BIDEN. Yes, Mr. Chairman.

I have, as everyone else around here does, four committee hearings, but the committee I rank on, Judiciary, is marking up the gun control bill, which is a hot item, and I will be leaving here about 10 o'clock, hopefully, to come back. But I just want to say that I look forward to the witnesses trying to help us out of what is obviously a difficult dilemma, and that is, we have got to find places to reduce this deficit, and obviously, the defense budget is one of those areas, and hopefully, we can approach it in a reasonable way.

I am looking forward to hearing their testimony.

Chairman DOMENICI. Thank you, Senator.

Mr. Rice, proceed.

STATEMENT OF M. LEE RICE, PRESIDENT, SHIPBUILDERS COUNCIL OF AMERICA

Mr. RICE. Thank you, Mr. Chairman.

I am Lee Rice, president of the Shipbuilders Council of America. The council is a trade organization representing principal shipbuilders and shiprepairers and the suppliers of equipment, materials, and services to these industries. A listing of the membership is provided.

I request that our full testimony as well as my verbal summary be included in the record.¹

Chairman DOMENICI. Without objection.

¹ See p. 275.

ESTABLISHING CORRECT LEVEL OF DEFENSE EXPENDITURES

Mr. Rice The subject of this hearing is a complex problem: How to establish the correct level of expenditure for the defense of the Nation.

It is popular to argue that the defense budget should be reduced as the easiest method to limit budget expenditures and thereby reduce the deficit. At stake, however, is the overall effect of such reductions on the interrelated strategies of deterrence and military response capability.

We as shipbuilders do not profess to be expert in defense strategy or threat scenarios. We are expert, however, in understanding both the magnitude and the difficulties of the tasks which must be accomplished in the Nation's shipyards under mobilization and during an extended war, and that the Nation's shipyard capacity is deteriorating rapidly.

Defense policy as enunciated by Secretary Weinberger is paraphrased as: First, avoid war by deterring its occurrence. Achieve this objective by developing and maintaining military forces with sufficient capability and capacity to convince potential adversaries that if they resort to military force to achieve national objectives, they will fail.

Second, have the capability to mobilize rapidly, deploy, and sustain conventional military forces as required.

Achievement of both objectives requires the existence of industrial capacity sufficient to provide support for sustaining the military undertakings.

As a consequence of the two stated objectives and the corollary conclusion, defense budgets must be weighed and fixed at the necessary levels of funding to assure achievement. Budgets must create physical assets and provide manpower in sufficient numbers to serve in both the military and industrial sectors.

CREATION OF ASSETS

The creation of assets occurs through the use of both commercial and Government-owned facilities. Clearly, Government-owned facilities are a normal part of the budget process. Commercial assets, on the other hand, are available only when commercial businesses can create and sell products or services at prices which will provide for maintenance and modernization of required plants and sustain employment.

It is well known that most of the heavy industries of the Nation are sorely pressed by international competitors in both domestic and world markets. The deterioration of a heavy industrial base requires that its capability to support the national security be evaluated on a continuing basis.

The defense budgeting process cannot avoid consideration of how to furnish deficiencies found in required facilities and manpower, at lowest cost to the Nation.

Policy initiatives of the Government must also be evaluated by consideration of their effect upon the industrial base, and cannot reduce assets which are required for the national security without the development of concurrent policy to provide them.

If assets cannot be provided by commercial means, direct Government funding must be considered as a part of the Nation's budget process, to support the strategy of deterrence, because adversaries can determine when our Nation's assets are insufficient in our free society. The failure of deterrence invites the exploitation of our weakness at a time of greatest advantage to an adversary.

The shipbuilding and shipping industries are prime examples of the problem. For many years, reliance has been placed on commercial markets to furnish ships and seamen, to provide the sealift resources required by the national security. Because of the changing nature of both the international dry cargo and tanker markets, and the older characteristics of the coastwise market, it is highly unlikely that commercial forces will cause vessels to become or remain available.

Further, due to both Government policy and the changing needs of shipowners, the shipbuilding industry is contracting rapidly, despite the naval programs now underway. Studies conducted jointly by the Navy and the Maritime Administration, which are summarized in the testimony given to the House Merchant Marine Committee last August—and are supplied with our full testimony¹—show that the level of both facilities and skilled manpower in the industry has fallen below the level required to support defense guidance requirements, or, even tasks required to support a single theater war in Southwest Asia.

In fact, the most critical demand occurs during mobilization. Additionally, present Government policies and proposed maritime initiatives, if promulgated, which are discussed also in detail in our full testimony, will exacerbate the divergence between requirements and availability.

Because at least 90 percent of the equipment, materials, and supplies destined for any war zone must move by sea, our Nation's ability to project and sustain its forces is directly dependent upon sealift and shipbuilding capabilities. Studies show that, to meet mobilization requirements, shipyards must find, train, and employ productively large numbers of new workers to meet demand. It is doubtful that this can be done. To whatever degree it cannot be done, our ability to project and sustain military force is sharply reduced.

During mobilization, shipyards must break out and prepare the reserve fleets because they are essential sealift resources. Additionally, defense-required equipment must be installed on operating vessels before they can be used in military support. As the size of the active fleet is reduced in response to commercial forces, growing dependence is placed on both the Government-controlled and Government-owned reserve fleets to carry out the requirements of sealift missions in both the surge and sustained phases of military operations.

AVAILABLE SHIPYARD ASSETS NOT SUFFICIENT

We can no longer say that available shipyard assets are sufficient. Consequently, the policy of deterrence may fail due to the

¹ See p. 284.

lack of credibility of shipyard capability alone. How do we know this to be true? The current study prepared by the Navy and the Maritime Administration fixes requirements of the size and characteristics of the shipyard mobilization base as they existed in October 1982. At that point in time, 164,000 skilled production workers were employed at 119 shipyard plants. Of these employees, 52,000 were working in non-Government shipyards, and the remainder in 110 private yards. From that point to the present, 10 of the private facilities have closed or announced a near-term plan to close, while the private work force, which numbered 112,000 in 1982, October of 1982, has also decreased by about 13,000 production workers. The major reason for the reduction in workload is the fact that commercial new building is near the point of extinction, and, lacking a major change of policy on the part of the administration, commercial building in the United States will not support the level of shipyard activity needed over the next decade.

Further, the Navy shipbuilding program is insufficient to sustain the required mobilization base.

Assuming full funding and timely initiation of the Navy's 5-year building program, the shortfall of workers available to undertake the difficult tasks of fleet readiness and breakout is rapidly approaching 40,000 skilled workers. By 1988, 25 percent of D-day demand is projected to be unavailable.

Further, the naval building program is concentrated in a few large private shipyards. For example, the 26 yards defined in the active shipyard base employ over 81 percent of the workers with a large part of this work force in 8 yards.

Any reduction in work available, whether naval or commercial, affects the ability of a large number of shipyards which are essential to the mobilization task, and the breakout to prepare for war to continue to remain viable business enterprises. Reduction of the naval program, quite simply, exacerbates the shortfall of workers available.

NO ACCOUNTABILITY FOR MAINTAINING SHIPYARD BASE

We have testified repeatedly that the Government, either through policy initiatives or through direct expenditures, must take action to solve the problem of maintaining the required shipyard base.

The alternative is to accept the fact that the entire strategy of deterrence fails because the adequacy of the deployability of the military assets is no longer credible.

Although we have not been challenged as to the correctness of this assertion, the problem remains unaddressed, as the national security risks grow, because the expenditure of funds is inevitably involved in the solution, and because there is no accountability for the maintaining of the shipyard base.

In summary, it is clear that consideration of the defense budget must encompass consideration of much more than the budget of the Department of Defense, if the strategies of deterrence of war and nuclear containment are to succeed.

The strength of the Nation's essential supporting industrial base cannot be ignored. The example we have presented of the status of

the maritime and shipbuilding and ship repair industry gives powerful evidence and support to the fact that laissez-faire policies and ideological free market precepts will not provide adequately for the national security.

Thank you.

Chairman DOMENICI. Thank you very much.

[The prepared statement of Mr. Rice follows:]

Testimony
of

M. Lee Rice
President

Shipbuilders Council of America

Before The Committee On The Budget
United States Senate

February 23, 1984

I am M. Lee Rice, President of the Shipbuilders Council of America. The Council is a trade organization representing principal shipbuilders and shiprepairers and the suppliers of equipment, materials and services to these industries. A listing of the membership of the Council is attached. I request that our full testimony as well as my verbal summary be included in the record of this hearing.

At issue, and the subject of this hearing, is a complex problem. How to establish the correct level of expenditures for the defense of the nation? It is popular to argue that the defense budget should be reduced as the easiest method to limit budget expenditures and thereby reduce the deficit. At stake, however, is the overall effect of such reductions on the interrelated strategies of deterrence and military response capability. We, as shipbuilders, do not profess to be expert in overall defense strategy, the analysis of threat scenarios, or the prediction of the type and outcome of a future war. We are expert, however, in understanding both the magnitude and the difficulties of the tasks which must be accomplished in the nation's shipyards under mobilization and during an extended war. We are expert, also, in the knowledge of how rapidly the industrial shipyard base and its vital supporting supplier base is deteriorating.

In accordance with Administration defense policy as

enunciated by Secretary of Defense Caspar Weinberger, the following statements paraphrase current Defense Guidance:

(1) Avoid war by deterring its occurrence. Achieve this objective by developing and maintaining military forces with sufficient capability and capacity to convince potential adversaries that if they resort to military force to achieve national objectives they will fail.

(2) Have the capability to mobilize rapidly, deploy and sustain conventional military forces as required to contain local conflicts.

Achievement of both objectives requires the existence of industrial capability sufficient to provide support for sustaining the military undertakings.

As a consequence of the two stated objectives and the corollary conclusion, defense budgets must be weighed and fixed at the necessary levels of funding to assure achievement. Budgets must create physical assets and provide manpower in sufficient numbers to serve in both the military and industry sectors.

The creation of assets occurs through the use of both commercial and government-owned facilities. Clearly government-owned facilities are a normal part of the budget process. Commercial assets, on the other hand, are available only when commercial businesses can create and sell products or services at prices which will provide for maintenance and modernization of required plants and sustain employment. As is well known, most heavy industries of the nation are sorely pressed by international competitors in both domestic and world markets. The deterioration of the heavy industrial base requires that its

capability to support the national security be evaluated on a continuing basis.

As a consequence of the change in the business potential of the U.S. heavy industries, a new set of questions must now be raised in addressing defense policy and the budgeting process. Can the industrial base now and in the future reliably provide the facilities and capabilities which are required by mobilization and a following war? If the answer to the question is negative, and if the set of objectives are to be achieved, the defense budgeting process cannot avoid consideration of how to furnish the required facilities and manpower at lowest cost to the nation.

Further, policy initiatives of the government must be evaluated by consideration of their effect upon the industrial base and its ability to perform in accord with defense-created demand. Clearly, government policy should not be such that it reduces assets which are required by the national security without the development of concurrent policy to provide the needed assets. If assets cannot be provided by commercial means, direct government funding must be considered as a part of the Nation's budget process. If this is not done the premises which underpin the system of deterrence can fail since adversaries can determine when the nation's assets are insufficient to support the military forces in our free society. The failure of deterrence invites the exploitation of our weakness at a time when conditions offer greatest advantage to adversaries.

The shipbuilding and shipping industries are excellent case

studies of the problem discussed above. For many years reliance has been placed on commercial markets to furnish ships and seamen to provide the sealift resources required by the national security. It is true that the actively operating shipping assets were augmented by government-owned vessels in its reserve fleets, but highest reliance was placed on the operating fleets. In the recent past because of the changing nature of both the international dry cargo and tanker markets and the altered characteristics of the coastwise market, it is highly unlikely that commercial forces will cause vessels (either in sufficient quantity or with necessary characteristics) to become or remain available. Further, due to both government policy and the changes which are occurring in the need of shipowners for new vessels, the shipbuilding industry is contracting rapidly. This is in spite of the large building program for naval vessels which is underway.

Studies conducted jointly by the Navy and the Maritime Administration which are summarized in the Testimony given to the House Merchant Marine Subcommittee on August 3, 1983 (Attachment 1) show that the level of both facilities and the skilled manpower in the industry have fallen below the levels required to support mobilization and the following tasks of a general war. Analysis of the study, which is based upon the demands defined in Defense Guidance, shows that the level of capability required in the shipbuilding industry is essentially fixed by mobilization tasks required to support a single theater war in Southwest Asia. Although the numbers of new vessels desired to be built during a global war exceed the single front scenario, the most critical demand occurs during mobilization. It can be stated that the

capacity and the capability of the shipbuilding industry is now below levels determined as required to support the national security. Additionally, current trends and the continuation of present policies, which are discussed in detail in the Yearend Statement issued by the Shipbuilders Council (Attachment 2), will exacerbate the divergence between requirements and availability.

Shipbuilding activities are necessary requirements for the breakout and preparation of the reserve fleets prior to their availability as essential sealift resources. Additionally, shipyards are required to install defense-required equipment to operating vessels before they can be used in military support capacity. As the size of the active fleet is reduced in response to commercial forces, growing dependence is placed upon both the government-controlled and government-owned reserve fleets (See Attachment 3) to carry out the requirements of sealift missions in both the surge and sustaining phases of military operations. The requirements are such that we can no longer say that available assets are sufficient to meet the demands which are created under either preparation for or engagement in war. Consequently, the effectiveness of the policy of deterrence must be questioned because of the lack of credibility of shipyard capability alone.

Because at least 90 percent of the equipment, materials and supplies destined for any war zone must move by sea, our Nation's ability to project and sustain its forces is directly dependent upon sealift and shipbuilding capability. It cannot be assumed that the necessary numbers of skilled workers, managers and

facilities can be found and made productive in time to meet mobilization demands. Studies show that shipyard mobilization requires shipyards to find, train and employ productively 100,000 new workers in about 18 months in order to make up the existing shortfall and meet production demands. It is doubtful that this can be done. To whatever degree it cannot be done, our ability to project and sustain military force is reduced. Instead of "getting there firstest with the mostest", we may not be able to sustain our forces abroad for anything more than a short period. Our potential adversaries certainly know this and must be planning their own means of sustaining forces accordingly.

A current study prepared by the Navy and the Maritime Administration which fixes requirements of the size and characteristics of the shipyard mobilization base assumes that the size and capability of the industry at the time of future mobilization is consistent with the industrial base as it existed in October 1982. At that point in time 164,000 skilled production workers were employed in 119 shipyard plants. Of these employees 52,000 were working in 9 government shipyards and the remainder in 110 private yards. From that point to the present 10 of the private facilities have closed or announced a near term plan to close while the private workforce which numbered 112,000 in 1982 has also decreased by about 13,000 production workers.

The major reason for the reduction in workload is the fact that commercial newbuilding is near the point of extinction and, lacking a major change of policy on the part of the Administration, commercial building in the U.S. will not occur except for a few coastwise trading vessels that will likely be

required over the next decade. It is often argued that the Navy shipbuilding program is sufficient to sustain the required mobilization base. In October 1982 in the private shipyard base, approximately 67,000 workers were engaged in naval new construction, 16,000 workers were engaged in naval repair and overhaul and 20,000 workers were engaged in commercial newbuilding and repair. Of the 20,000 employees engaged in commercial projects in October 1982, a year later 10,000 of those had been discharged from employment.

Assuming full funding and timely initiation of the Navy's five year building program, the shortfall of workers available to undertake the difficult tasks of fleet readiness and breakout is rapidly approaching 40,000 skilled workers or by 1988 25 percent of D-Day demand. Further, the naval building program is concentrated in a few large private shipyards. For example, the 26 yards defined as the Active Shipyard Base employ over 81 percent of the workers with a large part of this workforce employed in 8 of the yards. Any reduction in work available affects, therefore, the ability of a large number of shipyards which are geographically dispersed and are essential to mobilization and breakout to continue to remain viable business enterprises.

If, for example, the naval building program is reduced below the planned level, the shortfall of workers is exacerbated and the need for replacement programs in order to sustain the shipyard mobilization base increases rapidly. The Shipbuilders Council in testimony to the Congress time and time again has

shown that the government, either through policy initiatives or through direct expenditures, must take action to solve the problem of maintaining the required shipyard base. The alternate is to accept the fact that the entire strategy of deterrence fails because the adequacy of our military capability and deployability is no longer credible. Although we have not been challenged as to the correctness of this assertion, the problem remains unaddressed as the national security risks grow because the expenditure of funds is inevitably involved in the solution and because there is no accountability for the maintenance of the shipyard base.

In summary, it is clear that consideration of the defense budget must encompass consideration of much more than the budget of the Department of Defense, if the strategies of deterrence of war and nuclear containment are to succeed. The strength of the nation's essential supporting industrial base cannot be ignored. The example we have presented of the status of the maritime and shipbuilding and shiprepair industries gives powerful evidence and support to the fact that laissez-faire policies and ideological free market precepts will not provide adequately for the national security.

Statement of
M. Lee Rice, President
Shipbuilders Council of America
Before
Subcommittee on Merchant Marine
of the
Committee on Merchant Marine and Fisheries
House of Representatives
Regarding
Proposed Maritime Initiatives
HR-3156

August 3, 1983

Mr. Chairman and Members of the Committee, I am Lee Rice, President of the Shipbuilders Council of America which represents principal domestic shipbuilders, shiprepairers and suppliers of equipment and services to these industries. The maritime policy initiatives of the Administration contained in HR-3156 fail completely to focus upon a major issue that confronts our nation - maintenance of an adequate shipyard mobilization base, and therefore must be judged to be ill conceived. We hereby submit testimony pertaining to HR-3156 and focus attention upon the emerging national crisis caused by policy precepts which ignore national security. I request that our full statement and my summary be included in the record.

We applaud the efforts of the Chairman for developing a scholarly statement of rationale and the legislative history of maritime policy which is a part of the introduction to HR-3399, legislation to establish the Maritime Redevelopment Bank. The Chairman asserts that the fundamental premises of the Merchant Marine Act of 1936 remain valid. We agree. Section 502 of this important legislation, although ignored by both the Executive Branch and the Congress for many years, is a key to the future security of our nation. Section 502, in consonance with corollary legislation relating to preservation of our nation's industrial base, requires that the Executive Branch determine the shipbuilding capability necessary to support national

security requirements and provide programs to insure that required capacity is maintained. How best to provide an adequate shipyard mobilization base is an issue that cannot be ignored, as in the past, but must be determined. Indeed, the solution of this problem may be an important test of how the industrial base capacity, which is necessary to serve as the foundation of our national security, can be preserved under existing policy precepts of free trade wherein commercial markets are allowed to control the vitality and even the continued existence of basic industries.

Freedom does have a cost. We believe that our nation must determine both the quantity and nature of defense-related assets that are required and then decide how best to pay for these assets. Again, this is the issue to be confronted in regard to providing sealift and the required shipyard mobilization base.

This is not the first occasion this Committee has heard these statements from us. Nor will it be the last unless the issues we are addressing are resolved - adequately and promptly. The Shipbuilders Council has been consistent in stating the thesis that the DOD, working in concert with other agencies, must measure the adequacy of the nation's sealift inventory and determine the shipbuilding and shiprepair capability that is required to meet the demands fixed by defense needs. Today we are able to say that such determinations have been made. Thus, data is now available to allow a more reasoned determination of future maritime policy and the last excuse for the failure of

the Administration to act has been removed.

Studies of requirements imposed by military demands for sealift under the basic Defense Guidance plan have been determined by direction of the Defense Resources Board. In addition, the Department of the Navy working with the Maritime Administration has studied shipbuilding and shiprepair requirements which would be required by mobilization before and during a major global war. From these studies, many valuable conclusions are drawn. Two conclusions, however, are profound and directly relate to this hearing:

First Sealift assets are marginally inadequate to meet needs, particularly during the early surge phase of the war; however, actions which can be taken by the government and Allies make the problem manageable.

Second Significant commercial shipbuilding and shiprepair industries must be maintained because construction and repair of naval vessels alone will not sustain capabilities required to mobilize for and fight a global war.

These conclusions cannot be ignored if defense planning and our strategy of deterrence are to be effective. Deterrence is successful only if enemy nations believe that we can prevail in any military confrontation. On the basis of information readily available in our free society, the military planners of potential enemies can both calculate sealift assets we require in a global war and determine the adequacy of our shipyard capacity to meet the demands of mobilization and a global conflict. Therefore, we cannot expect our strategy of de-

terrence to be effective if either sealift or shipyard assets are allowed to shrink below minimum required levels. Maritime policy must be included as a vital element of any analysis of national security need. As we have previously shown, however, there exists no mechanism which controls, relates or coordinates maritime policy with defense policy. The President alone is responsible since no delegation of authority or responsibility has been made.

The Administration's maritime initiatives contained in HR-3156 are prime examples of policy development at counter-purpose to national security requirements. HR-3156 would: (1) renew foreign building liberties for subsidized shipowners, (2) provide immediate eligibility of foreign built vessels to participate in cargo preference programs, (3) allow tax-deferred capital construction funds to be used for foreign building, and (4) eliminate the ad valorem tariff on foreign repairs. Each of these initiatives will act to reduce the shipbuilding and shiprepair capability of our nation.

These policy initiatives of the Administration as expressed by the Department of Transportation are put forward with the view that domestic commercial shipbuilding and repair capability is unnecessary or should be sacrificed to improve the operating advantages of shipowners. Concurrently, the Navy/MARAD study of the required shipyard mobilization base reaches the exactly opposite view and concludes that only with a substantial commercial workload in our shipyards can the shipyard industrial base be maintained. A dangerous dichotomy

of purpose exists.

Therefore, the Congress must act. The proposals of HR-3156 must not become the law. Further, the Congress must require that the Administration fulfill its constitutional obligation and provide a program which will maintain the shipyard mobilization base at an adequate level of capability. We as shipbuilders can present facts, plead and vote - but we cannot require the Executive Branch to act.

The Navy/MARAD study of the shipyard mobilization base assumes that 119 defined shipyards exist at the beginning of the war with employment in these yards at the level of October 1982. This date is significant only in that it was the datum point which coincides with the initiation of the study. Of these shipyards, nine are public yards (eight Navy yards and one Coast Guard yard), 27 are major shipyards defined as the Active Shipyard Base while 83 are repair and small vessel construction yards. Total production workers in October 1982 numbered 165,000 of whom about 52,000 were employed in public yards. Excepting Navy yard employment, approximately 80 percent of total private employment is within the 27 Active Shipyard Base. Further, skilled workers are assumed in the study to be available to all private shipyards as needed. Maximum employment was constrained to not exceed levels of employment deemed achievable through surveys of the shipyards. Facilities, drydocks, graving docks, slipways, marine railways, and building ways are assumed to continue to be in place at the time of the war, but are increased to account for new facilities - principally new

drydocks - known to be on order and scheduled for delivery in the next several years. Thus, an inventory of assets and skilled manpower is cataloged as available.

The study next determines tasks which must be performed during the entire conflict. The prime tasks during mobilization and early in the conflict are the breakout of reserve vessels, both naval and commercial, installation of defense equipments in these vessels (as well as to those in the active fleets as necessary), and the acceleration of naval overhaul and construction then underway. As the war progresses, the shipyards add the work associated with repair of battle-damaged vessels and begin the construction of new naval vessels and merchant vessels which are needed both to replace vessels lost during the conflict and to demonstrate our firm commitment to defeat the enemy. Beyond the first six months of the war, shipyard employment is increased in both the public yards and in private yards reaching a peak of 225,000 production workers early in the second year of the war. Thereafter, employment levels which are determined by the war scenario assumed in the study decline with reduced demand.

It is highly significant to the study that 110 yards, including the 27 Active Shipyard Base yards, are available to perform mobilization and fleet readiness tasks during the first six months. Nearly all of these yards are fully occupied by critical demands. It is further assumed that other facilities would be used to construct the small boats, landing craft, and other equipments needed and that specialized yards would sup-

port offshore oil industry needs. Later, as the nature of the work shifts to a mix of vessel repair, battle damage repair and new construction, a number of the small repair yards are released to perform tasks other than fleet readiness and repair. Without the availability of the 110 yards, including the 27 Active Shipyard Base yards, which, we repeat, are manned at the October 1982 level, mobilization and early conflict tasks cannot be accomplished.

Following the initial phase of the war, construction of neither the desired number of new naval combatants nor merchant vessels was found to be possible. The failure to meet the imposed shipbuilding demand is the result of both lack of suitable facilities and shipyard qualifications and experience. Further, ship construction rates are significantly constrained by the availability of critical components.

As we have pointed out, employment in shipyards is declining rapidly as the backlog of commercial work is completed. By year-end, commercial workload within the 110 yard base is expected to sustain only about 15,000 workers. Under present policies, a further decline is predicted such that employment levels in the private shipyards will be about 40,000 below the levels required by mobilization tasks throughout the second half of this decade and beyond. To prevent such a capability shortfall, commercial programs must exist which will sustain employment at adequate levels. Such commercial work must engage 35 percent of private shipyard employment.

Decline in total shipyard employment, although a valuable

statistic, does not completely portray the decline in shipbuilding and shiprepair capability that is occurring. With decline in shipyard employment, the remaining work, which is almost entirely new construction and repair for the Navy, will be concentrated in a few major shipyards and repair facilities. Thus, because maintenance of shipbuilding facilities is expensive, it is improbable that unused facilities will be kept in a state of readiness. It appears quite likely that numerous facilities will be abandoned or diverted to alternate purposes. As a consequence, the assumed shipyard facility count utilized to measure shipyard capability is likely to prove to be very optimistic.

Of great importance is the fact that both engineering departments and production planning and management personnel will be sharply reduced as the commercial work backlog falls. This will occur because the mix of naval construction that will be contracted in the next five years does not require the engineering and management capability which presently exists in the industry. With both reduced new construction demand and workload, the surviving shipyards will not be able to pay the cost of keeping this capability in place. Once the capability is dissipated, it will be both expensive and time consuming to recreate.

Since the Navy/MARAD study assumes that manpower, capability levels and facilities in place in October 1982 will be in place at the beginning of the war, a significant reduction in any one of these assets causes the level of effort to

accomplish the required tasks during the war to increase in difficulty and in the required time of performance. Neither the tasks assumed to be accomplished by the study during mobilization nor during the war could be carried out. Indeed, a valid criticism of the study is that the set of assumptions used are universally optimistic. Optimism, however, does not invalidate the conclusions of the study. On the contrary, optimism in the assumptions has the effect of validating the conclusions and requiring more extensive corrective actions.

The overall problem is not trivial. As we pointed out to Secretary Dole in early April, a commercial shipbuilding program which employs 32,000 skilled workers in new construction would build substantial numbers of commercial vessels. For example, if the ratio of direct to indirect workers is 4.5 to one, as is reasonable, and if two classes of vessels are constructed: (1) sophisticated containerships and (2) modern liquid or drybulk vessels, then those workers would construct six containerships and 25 bulk vessels per year. The value of these vessels would be about \$2.5 billion. The problem our nation faces is, we repeat, not trivial.

HR-3156 proposes that shipowners may purchase vessels overseas without constraint, that shipowners can immediately utilize foreign built tonnage in cargo preference trades and can use tax-deferred funds (CCF) toward the purchase of these vessels. Such actions remove all incentives and restrictions which require vessel construction to occur in U.S. shipyards. Further, HR-3156 removes the 50 percent ad valorem duty which

is imposed on foreign repairs made to U.S.-flag vessels. Such action will have a major impact upon the roughly 90 shipyards which exist largely to perform shiprepair work and which the Shipyard Mobilization Base study found required to exist and to be manned at the October 1982 level of capability to carry out required mobilization and war related tasks.

We are not unmindful of the fact that a requirement to purchase ships and shiprepair domestically imposes a cost burden upon shipping operations of U.S.-flag companies. However, to attempt to reduce these costs by further export of our existing shipbuilding capability and thereby cause loss of assets required for national security purposes cannot be justified. A piecemeal approach in changing long-standing maritime policy without consideration of our national security interests is misguided and irresponsible.

HR-3156 also proposes that foreign ownership be allowed to increase to 75 percent as a method of attracting additional capital investment in U.S.-flag shipping. HR-3156 attempts to retain control of shipping assets to meet national security needs by requiring that a majority of each Board of Directors for companies with foreign ownership up to the 75 percent allowable maximum be U.S. citizens. We submit that true control rests with ownership rights and that the device of requiring a majority of Board members to be U.S. citizens is specious.

Although our primary focus has been upon the shipyard mobilization problem, the study of sealift assets should not be disregarded. The conclusions of the sealift study are based

upon present fleet inventories of U.S.-flag and government-controlled shipping, and assumes satisfactory execution of the Navy's five-year sealift program. Even so, margins are extremely small. Any change which either reduces the number of available militarily useful vessels or changes the overall characteristics of the fleet will cause inability to meet defined sealift needs. What is needed is a program under which sufficient vessels having desirable military characteristics are constructed so that the shipyard mobilization base is maintained and the inventory of useful vessels is enhanced.

This Committee has, of course, taken the constructive step of passing HR-1242, the Competitive Shipping and Shipbuilding Act of 1983. As you know, the Shipbuilders Council has strongly supported this legislation because of our firm view that correction of maritime deficiencies - both the provision of shipping assets and the maintenance of the shipyard base - requires a policy which places cargo on U.S.-flag vessels built in domestic shipyards. Unfortunately, the Maritime Administrator, speaking for the Administration, has rejected cargo reservation policies out-of-hand but offers no alternate approach. We grant that there are valid objections to the approach of HR-1242. Without doubt, however, a policy position which places the future freedom of our nation at risk is more objectionable.

It has been argued by some that the shipbuilding industry itself must solve the problem of creating markets, improving productivity and prices so that the nation can enjoy the

benefits of an adequate shipyard mobilization base without cost. We wish this were possible but submit that shipyards alone cannot accomplish this task - with certainty not in the critical period immediately ahead.

In April, in testimony submitted to the Subcommittee on Merchant Marine and Tourism of the Committee on Commerce, Science and Transportation of the United States Senate, we said: "We, as shipbuilders, neither have our heads in the sand nor do we expect to be supported without adequate justification. If it is determined that our national needs do not require all of our potential capacity nor require a capability to build commercial vessels, so be it. This broad and far-reaching policy position should, however, not be chosen without due consideration of its consequences. We may never agree with this conclusion. At a minimum, we deserve to know, as does the entire citizenry, that expert knowledge and sound military and political judgment underlies such a policy decision. This is lacking at present." Three months later, we assert that experts have reached a judgment. A judgment that finds that our commercial shipbuilding and shiprepair industry is a vital national requirement.

We also said: "We believe firmly that given a problem, which directly involves our nation's freedom and security, the maritime industry - as citizens, businessmen and labor leaders - working with the Congress and with an Administration also seeking to solve the problem, can do just that. Failure is clearly unacceptable."

We now challenge the Administration and the Congress to work with our industry to find solutions. Creation of viable maritime policy which provides adequately for the demands of our national security at acceptable cost to the nation can neither be ignored nor deferred.



SHIPYARD WEEKLY

SHIPBUILDERS COUNCIL OF AMERICA

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MARITIME POLICY ADRIFT

At the beginning of 1983 the domestic shipbuilding and ship repair industries were in overall rapid decline. It was deemed improbable, even then, that the capacity and capability of the industries was sufficient to meet the requirements which would be imposed by mobilization and a major war. These facts and conclusions were not the result of labored analyses held in the secret councils of the government. They were known to anyone reasonably knowledgeable of the status of these industries and the requirements which would be imposed by mobilization and the demands which would occur during a war.

Paralleling the loss of capability and capacity of the domestic shipyard mobilization base was the predictable future rapid decline of the sealift capacity of the nation. Even limited analysis by those knowledgeable about the status of the international shipping industry and the ability of U.S. flag operators to compete and be able to expand or renew their fleets indicated that sharp reduction in the size of the operating fleets was likely. This reduction will cause a contraction in the pool of available manpower which would be required to crew vessels in time of national emergency. Further, projection of the commercial demand for militarily useful tanker tonnage into the next decade indicated that this fleet would be smaller than required to meet national security needs.

The nation and its leaders had been shown by the British campaign in the Falklands that both naval and commercial shipping is needed to protect vital interests. This is particularly true when defined vital interests may not be in concert with those either of allies or other nations whose support and maritime assets may be essential for use in the pursuit of national interests.

During 1983, broadened discussion of maritime needs occurred in the Congress and in the deliberations of numerous groups of citizens active in maritime affairs. That the problem must be faced and solutions found was a universal conclusion whenever the innate linkage between the national security and maritime power was debated. Indeed, studies conducted by the Administration

concluded that sealift capacity was marginally inadequate and likely to decline and that the shipyard mobilization base could not support the tasks of mobilization and a major war.

Is it not reasonable, therefore, that the citizenry should have expected the Administration, which has espoused as basic policy the need for vigilant military preparedness and has consistently developed and supported defense budgets alleged to correct deficiencies in our military capability, would have directed that these problems be addressed and corrected?

Against this background, examine the Administration's actions and the policy initiatives which have been proposed.

Early in the year the Department of Transportation proposed that tanker vessels built with Construction-differential Subsidy and which were, in the main, chartered under long term commitments to international petroleum companies be allowed to repay the unamortized portion of the construction subsidy by using government guaranteed loans and gain status as qualified Jones Act vessels. The Department admitted to the Congress that no consideration had been given to the national security implications of the proposed rule. Further, DOT stated to the Congress that if the rule caused a significant negative effect to the national security that the rule must be reconsidered as to its appropriateness. Shortly, after the completion of hearings in the House of Representatives on the proposed rule, the Deputy Secretary of Defense, Paul Thayer wrote to Secretary of Transportation Elizabeth Dole stating that the rule would cause significant harm to the national security. The position of the DOD was that the rule would reduce both the shipyard mobilization base and the number of militarily useful tankers. Yet, at present, the rule is still under active consideration for implementation and is strongly advocated by certain officials within the Department of Transportation.

In midyear, the Administration proposed to the Congress that vessel operators holding Operating-differential Subsidy contracts be given the permanent right to retain these contracts and to be able to purchase vessels abroad. Further, it was proposed that the ad valorem duty on foreign repairs on U.S. flag vessels be eliminated and thus remove an important underpinning of the domestic ship repair industry. Other initiatives sought in the legislation included the use of tax deferred CCF monies to finance the purchase of foreign built vessels, the immediate ability of foreign purchased U.S. flag vessels to carry preference cargos and a major increase in the allowable ownership of U.S. flag vessels by foreign nationals. Thus, in these initiatives the Department

of Transportation proposed that the domestic capability to build commercial vessels be abandoned beyond Jones Act demand. Ironically, this very demand will be effectively eliminated for many years due to the overtonnaging of the trade which will occur if the CDS repayment scheme is implemented.

Throughout the latter half of the year the potential that Alaskan crude oil would be allowed to be exported to Japan and other Pacific Rim countries was under active consideration within the Administration. Once again, little, if any, consideration was given to the loss of business to domestic shipyards and the resulting negative effect on the national security. Also, the fact that the proposal would result in the layup or scrapping of many handy size tankers has been ignored.

To the dismay of the maritime community, the Department of Transportation announced that even though existing law required otherwise, cargos shipped under the Department of Agriculture's blended credit program would not be required to be shipped under the cargo preference law because compliance with the law would frustrate the plan under which this program was to operate. Thus, the Administration chose to flout compliance with existing law. Again, national security was sacrificed to other objectives.

In a further action, the Department of Transportation published proposed guidelines under which the holders of Operating-differential Subsidy contracts could terminate these contracts in exchange for prepayments by the government of future obligations. No showing that such actions would have a positive effect on the national security was made. Indeed, no test that at least the national security would not be harmed was even proposed.

As we have stated repeatedly throughout 1983, there exists an obvious and highly dangerous void in policy development. The policy actions cited above clearly demonstrate that a dichotomy of purpose exists within the Administration. The President is, of course, responsible for both the national security and the development of effective maritime policy. He alone remains responsible because no delegation of authority has been made.

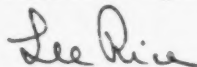
What is most disconcerting about this void in policy development is that we live in a very unstable and volatile world. Indeed, 1983 witnessed heightened international tensions between the United States, the Soviet Union and her satellite states. Nuclear arms limitation talks were broken off in Geneva. The conflict in Lebanon continues and ongoing direct involvement using military forces of the United States has been recently reaffirmed by the President. Finally, closer to home, the rescue

operation in Grenada was carried out, and it remains highly probable that the Caribbean Basin will remain unstable. Seapower will remain a high priority and a vitally needed resource.

The fundamental question is whether or not the President, having stated so strongly and positively his support for the industry as a vital element of national security during the 1980 presidential campaign, is aware of the detrimental effect of the actions of his Administration or the growing threat to national security which they represent. We continue in our belief that he does not. We cannot believe that this situation would continue if the President knew how dangerous the present course has become. This view is supported by the strong advocacy by the President for the need to continue the program to rebuild and maintain the strength and capability of the Navy. We support completely the President's policies in regard to the Navy, but find these deficient and too narrow to meet present and future overall security needs.

1984 will be a new year. Will it finally mark the beginning of the fulfillment of the promises of candidate Reagan given in 1980? Time is short for the initiation of actions to reduce the risks to the nation caused by failures of the past.

Let us begin the New Year with the resolve that we will continue to insist that our message cannot be ignored.



M. Lee Rice
President

THE MEMBERS, OFFICERS AND STAFF
OF THE
SHIPBUILDERS COUNCIL OF AMERICA
WISH YOU A
HAPPY NEW YEAR!

APPENDIX A

Growing Dependence Upon Use of Government-
Owned and Government-Controlled Fleets

A recent projection of the composition of militarily useful vessels in the U.S.-flag fleet in 1988 has been made.⁷ Data are shown in Table 1 for various classes of vessels projected in commercial fleets and in comparison with an earlier projection titled "Joint Strategic Capabilities & Programs Assessment - 1983".⁷

TABLE 1

Summary of Changes Militarily Useful Ships from "Joint Strategic Capabilities & Programs Assessment - 1983" to Projected Sealift Data of FY '1988, Commercial Fleet*

<u>COMMERCIAL FLEET</u>	<u>JSCP</u> <u>1983</u>	<u>New</u> <u>Builds</u>	<u>Transfers</u>		<u>Scrap</u>	<u>FY</u> <u>1988</u>
			<u>In</u>	<u>Out</u>		
Dry Cargo						
Freighter/Partial						
Containership	89	0	0	33	2	54
Non-Selfsustaining						
Containership	90	33	4	12	24	91
Self-sustaining						
Containership	7	0	0	3	4	0
Barge Carrier	19	0	0	2	0	17
Barge/Car Carrier	2	0	0	0	2	0
Container/Ro-Ro	1	0	1	1	0	1
Passengership	3	0	0	0	0	3
Total	227	33	5	52	32	181
Tankers	143	14	19	39	37	100

These data show that whereas the "Joint Strategic Capabilities & Program Assessment - 1983", an analysis done by the staff of the Joint Chiefs of Staff in late 1982, indicated

* Not included are approximately 12 dry bulk vessels, all relatively new and judged to be of military utility. At the time of the referenced study, dry bulk vessels were not classified as militarily useful. Including this small class of vessels does not alter basic conclusions drawn.

that 370 vessels classified as militarily useful were in the U.S.-flag commercial fleet and that the new assessment projects available vessels in 1988 to be only 281. These data classify as militarily useful all 33 non-selfsustaining containerships expected to be constructed in the period to 1988.

In regard to the classification - Dry Cargo, expected newbuildings consist solely of non-selfsustaining container vessels which are rated as having low value as to military utility. The total cargo capacity of the dry cargo fleet is stable even though fewer vessels are available. However, the carrying capacity of vessels rated as highly militarily useful decreases sharply. Further, as of 1988, the commercial fleet, excepting non-selfsustaining containerships, numbers only 90 vessels.

Table 1 indicates that militarily useful tankers, defined as coated vessels under 80,000 dwt capacity,* will be reduced from 143 to 100 vessels. Thirty-seven vessels are expected to be scrapped. This number could increase due to changes in government policy or commercial changes in demand. Included in the projected 1988 data are 13 integrated barge units which were not included in the 1983 data base; therefore, Transfers In does not represent a change in building demand.

The same study shows data for planned changes in the government-owned and government-controlled fleet. These data are shown in Table 2.

* In the later study, tanker size judged to be militarily useful was increased from 50,000 dwt to 80,000 dwt.

TABLE 2

Summary of Changes "Militarily Useful Ships from "Joint Strategic Capabilities & Programs Assessment - 1983" to Projected Sealift Data of FY 1988, Government-Owned and Government-Controlled Fleet.

<u>READY RESERVE FLEET</u>	<u>JSCP 1983</u>	<u>New Builds</u>	<u>Transfers</u>		<u>Scrap</u>	<u>FY 1988</u>
			<u>In</u>	<u>Out</u>		
Dry Cargo						
Victory	1	0	0	1	0	0
Freighter/Partial						
Containership	24	0	21	2	0	43
Container/Ro-Ro	2	0	0	0	0	2
Containership (T-ACS)	0	0	11	0	0	11
Seatrain	5	0	0	0	0	5
Total	32	0	32	3	0	61
Tankers	0	0	16	0	0	16
<u>NATIONAL DEFENSE RESERVE FLEET</u>						
Dry Cargo						
Victory	129	0	1	0	0	130
Freighter/Partial						
Containership	4	0	17	2	1	18
Non-Selfsustaining						
Containership	4	0	4	3	1	4
Selfsustaining						
Containership	3	0	0	2	1	0
Seatrain	4	0	0	0	3	0
LST	10	0	0	0	0	10
Troopship/Schoolship	17	0	0	1	0	16
Total	171	0	22	8	7	178
Tankers	14	0	28	0	14	28
<u>NAVY-OWNED</u>						
Dry Cargo						
Freighter	2	0	0	0	0	2
Non-selfsustaining						
Containership	6	0	2	0	0	8
Ro-Ro	2	0	0	0	0	2
Total	10	0	2	0	0	12
Tankers	5	0	0	5	0	0
<u>MSC-CHARTERED</u>						
Dry Cargo						
Freighter/Partial						
Containership	19	0	0	4	2	13
Container/Ro-Ro	1	0	1	0	0	2
Ro-Ro (Includes TAKX)	5	8	5	0	0	18
Barge Carrier	2	0	1	0	0	3
Total	27	8	7	4	2	36
Tankers	25	7	0	6	3	23
Total Dry Cargo	240	8	63	15	9	287
Total Tankers	44	7	44	11	17	67

Whereas the data for commercial vessels as shown in Table 1 indicate a reduction in available vessels, the data of Table 2 indicates significant increases in the number of government-controlled and government-owned vessels. This occurs as a result of new construction or charter of new vessels for these fleets and because militarily useful vessels are purchased by the government when retired from commercial service. Two consequent demands result under mobilization, (1) the work to be performed to breakout and outfit reserve vessels increases, and (2) the task of crewing the reserve status vessels is increased in magnitude.

Comparision of the available and presumed operating vessels with reserve fleet vessels, considering numbers of vessels only is shown in Table 3.

TABLE 3

Comparison of Numbers of Militarily Useful Vessels In Operating Status in 1988 with Numbers of Vessels in Reserve Status

DRY CARGO-OPERATING		Number of Vessels
Commercial (no lay-up)		181
Navy-owned		12
MSC-Chartered		36
Total		229
DRY CARGO-RESERVE FLEETS		
Ready Reserve		61
National Defense Reserve Fleet		178
Total		239
TANKERS-OPERATING		
Commercial (no lay-up)		100
MSC-Chartered		23
Total		123
TANKERS-RESERVE FLEET		
Ready Reserve		16
National Defense Reserve Fleet		28
Total		44

These data indicate that operating commercial vessels would number 352, assuming no lay-up, and that the reserve fleet includes 283 vessels. If, as is likely, about 40 percent of the militarily useful tanker fleet is in lay-up or has been purchased by the government to prevent scrapping, then the operating vessels would be reduced to 312 while non-operating vessels would be increased to 323 vessels.

In summary, these data show that the reliance of the nation upon government-owned or government-controlled vessels is increasing.

It is also noted that very low numbers of government-owned vessels are scrapped, 21 vessels of which 14 are tankers. It is presumed that the class of Victory ships in the NDRF will remain available. This fleet numbers 130 vessels in 1988 and represents 73 percent of the vessels of the NDRF fleet.

REGULAR MEMBERS

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Post Office Box 1507
Mobile, AL 36601

The American Ship Building Co.
Suite 800
Lincoln Pointe Building
2502 Rocky Point Road
Tampa, FL 33607
Amship Division; Lorain, OH
Tampa Shipyards, Inc., Tampa, FL

Avondale Shipyards, Inc.
Post Office Box 50280
New Orleans, LA 70150

Bath Iron Works Corp.
700 Washington Street
Bath, ME 04530

Bay Shipbuilding Corp.
605 N. 3rd Avenue
Sturgeon Bay, WI 54235

Bethlehem Steel Corp.
Shipbuilding Division
Bethlehem, PA 18016
Beaumont, TX
Sparrows Point, MD

Coastal Dry Dock & Repair Corp.
Brooklyn Navy Yard
Building 131
Brooklyn, NY 11205

Dillingham Maritime Group
P. O. Box 4367
Portland, OR 97208

General Dynamics Corp.
Pierre Laclède Center
St. Louis, MO 63105
Electric Boat Division, Groton, CT
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General Ship Corp.
400 Border Street
East Boston, MA 02128

Hoboken Shipyards, Inc.
1301 Hudson Street
Hoboken, NJ 07030

Ingalls Shipbuilding Division
Litton Industries
Post Office Box 149
Pascagoula, MS 39567

Jacksonville Shipyards, Inc.
750 East Bay Street
Post Office Box 2347
Jacksonville, FL 32203

Jeffboat, Incorporated
P. O. Box 610
1030 East Market Street
Jeffersonville, IN 47130

Lockheed Shipbuilding and
Construction Company
2929 Sixteenth Avenue, SW
Seattle, WA 98134

Marine Power & Equipment Co., Inc.
1441 North Northlake Way
Seattle, WA 98103

Marinette Marine Corp.
Ely Street
Marinette, WI 54143

Maryland Shipbuilding &
Drydock Co.
Post Office Box 537
Baltimore, MD 21203

National Steel & Shipbuilding Co.
Harbor Drive at Twenty-Eighth Street
Post Office Box 80278
San Diego, CA 92138

Newport News Shipbuilding
4101 Washington Avenue
Newport News, VA 23607

Norfolk Shipbuilding & Drydock
Corp.
Post Office Box 2100
Norfolk, VA 23501
Norfolk, VA (2 plants)
Berkeley, VA

Northwest Marine Iron Works
Post Office Box 3109
Portland, OR 07208

Pennsylvania Shipbuilding Company
P. O. Box 442
Chester, PA 19016

Peterson Builders, Inc.
101 Pennsylvania Street
P. O. Box 47
Sturgeon Bay, WI 54235-0047

Savannah Shipyard Co.
Post Office Box 787
Savannah, GA 31402

Southwest Marine, Inc.
Foot of Sampson Street
Post Office Box 13308
San Diego, CA 92113

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Todd Pacific Shipyards Corp.
One State Street Plaza
New York, NY 10004
Alameda, CA,
Brooklyn, NY, Galveston, TX
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Port Everglades, FL 33316

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Eaton Corp.
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New York and New Jersey Dry Dock Assn.
New York, NY

Western Shipbuilding Assn.
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Standard Marine Services, Inc.
Bayonne, NJ

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Brooklyn, NY

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Ocean Electronics, Inc.
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Terry Corporation
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Hayward Industrial Products, Inc.
Elizabeth, NJ

Poten & Partners, Inc.
New York, NY

McNab, Inc.
Mount Vernon, NY

McLean Contracting Company
Baltimore, MD

Tidewater Construction Corporation
Norfolk, VA

Williams & Watts, Inc.
Fairfield, NJ

Seacoast Electric Supply Corp.
Rye, NY

ManTech International Corporation
Alexandria, VA

Pepper Industries, Inc.
San Diego, CA

Maersk Line, Limited
New York, NY

Foley, Hoag & Eliot
Boston, MA

Chairman DOMENICI. Mr. Rice, I have just one question, and then I will proceed with the next witness.

Your entire statement has been made available.

Mr. RICE. Yes, it has, sir. It is in the record. I asked that it go in the record.

Chairman DOMENICI. Thank you very much.

Now, Dr. Epstein, guest scholar from Brookings, we would be delighted to hear from you. We have your written testimony, and it will be made a part of the record.¹

You may proceed.

STATEMENT OF DR. JOSHUA M. EPSTEIN, GUEST SCHOLAR, THE BROOKINGS INSTITUTION

Dr. EPSTEIN. Thank you, Mr. Chairman.

With your permission, I will excerpt from the written statement in my opening remarks.

Chairman DOMENICI. Fine.

OVERALL SITUATION

Dr. EPSTEIN. The administration requests \$305 billion in budget authority and \$264.4 billion in outlays this year. These represent real growth rates of 13 percent and 9.3 percent, respectively.

The broadest question before us is therefore clear: Are we living in a military emergency which calls for a crash defense spending program? The administration's rhetoric and budget suggest an affirmative answer. I think there is room for doubt.

While the Soviets continue to spend heavily on defense, the rate of spending increase appears to have been consistently overrated for the period 1976-81. By contrast to previous estimates, the CIA now holds that the rise in the total cost of defense since 1976 has been slower, about 2 percent a year; procurement of military hardware was almost flat in 1976 through 1981. The Soviets simply did not field weapons as rapidly after 1976 as before.

While Soviet growth has been slower than previously estimated, U.S. spending was greater than the administration would have us believe; Secretary Weinberger continues to speak of a decade of neglect. In fact, the "decade of neglect" saw cumulative American outlays verging on \$2 trillion in constant fiscal year 1984 dollars. And while—at least on the CIA's old estimates—the Soviets outspent the United States, the NATO Alliance has outspent the Warsaw Pact consistently since 1965.

SPECIFIC FAILURES OF ANALYSIS

At this most general of levels, then, Soviet growth has been overrated, while Western efforts have been understated. But the assessment underlying this year's budget request rests on more specific failures of analysis.

Failure to count allies, for example, extends beyond overall budget comparisons. While Secretary of the Navy John Lehman bemoans the loss of maritime superiority, the United States and its

¹ See p. 320.

allies built almost twice as many major combat ships as the U.S.S.R. and its allies during the "decade of neglect."

Failure to standardize units yields misleading comparisons. The number of Soviet divisions is often compared to the (much smaller) number of U.S. divisions. Seldom is it noted that the U.S. active division is almost 60 percent larger in manpower, 40 percent more expensive, and, by the Army's own measures, up to 50 percent more combat effective than its Soviet counterpart.

Failure to weigh geographical factors can further cloud the picture. Large portions of the Soviet Navy are icebound much of the year, and its Baltic and Black Sea fleets would have to traverse vulnerable choke points to break into the open ocean where, despite recent progress, they would lack underway replenishment or fleet air defense comparable to the U.S. Navy's.

Failure to count what counts is exemplified by nuclear comparisons noting the Soviet "edge" in strategic launchers, while ignoring the United States lead in deliverable warheads.

What makes all the bean counting so supremely unconvincing is its glaring inconsistency with the services' own budget requests. For example, if the Navy really believed that the category-by-category comparison of ship inventories was meaningful, there would be no basis whatever for further acquisition of large-deck attack aircraft carriers, since the United States (alone) already "leads" the U.S.S.R. and (its allies) to the tune of 13- to -0.

In general, when the services ask for money, they want quality; but all too often, they assess the Soviet threat as though quantity alone mattered most. If only the numbers matter, then let us hear no more about quality. And if quality is worth the money, then let us not assess the threat as though it all came down to bean counting.

Similarly, we are asked to spend billions on battlefield maintenance and support, on theater logistics and mobility, on training, on command, control, communications, and intelligence. If the resulting levels of sustainability, personnel skill, and overall flexibility are worth these billions—and I think they are—then their benefits should be reflected in our assessments of the military balance. But more often than not, they are ignored and supplanted by bean counting in the so-called threat briefing.

I think it is fair to say that if all relevant parties are counted, if apples are compared to apples, and oranges to oranges, and if the United States takes some credit for the operational and qualitative advantages on which we spend so very much, the case for a crash military buildup weakens. I stress that I am not arguing that America can afford to be weaker militarily; it cannot. The question before us, though, is whether America can be strengthened more efficiently. I think it can.

The notion of efficiency presumes some set of goals or objectives, however. Unfortunately, the goals of the Reagan buildup have never been especially clear—at least, the connection between goals and forces has not been clear. On the contrary, the administration talks about "protracted nuclear war" while deploying the MX missile in a basing mode which invites its early destruction; they talk about many simultaneous contingencies while underfunding the strategic lift necessary for many concurrent reinforcements.

MISSIONS ACCOUNTING FOR BULK OF SPENDING

The main missions which account for the bulk of our spending are, in fact, not difficult to identify. In the conventional sphere, they are the defense of Western Europe, the defense of the Persian Gulf, and to a lesser extent (budgetarily, at any rate) the defense of South Korea. The Navy's primary conventional mission is to secure the sea lanes to these theaters of war. Looming behind these capabilities is the eminence grise, nuclear deterrence.

If I may say a few words about each, the priorities reflected in my alternative budget proposal, which is included in my statement for the record, may be clearer.

PERSIAN GULF

First, a few words about the Persian Gulf. I would be happy to discuss this at greater length, if you would like, but to make a long story short, if it gets there in time, the current rapid deployment force should present an imposing deterrent to Soviet aggression. On the other hand, if it gets there too late, then not even the administration's much larger planned rapid deployment force is likely to succeed in driving out an entrenched Soviet force. Therefore, rather than increasing the force's size, our highest priority should be to increase its speed. This is reflected in my budget alternative, which fully funds existing airlift, prepositioning, and strategic tanker programs. It further relieves global cargo constraints by accelerating the prepositioning program in Europe, and by canceling the redundant C-17 in favor of increased procurement of more cost-effective fast sealift ships.

EUROPE

Similarly in Europe, there are definite improvements to be made, but the situation is not yet completely out-of-hand. Although our allies can and should meet their spending growth commitments, NATO does consistently outspend the Warsaw Pact on defense. A greater percentage of NATO's (larger) aggregate defense expenditure is directed at the European theater, while upwards of 15 percent of Soviet spending is directed at China. Our allies are, in my view, more reliable than those of the Soviets. In general, Western active units receive more training than Pact units, and Western training is, in general, substantially more realistic; it benefits from more combat experience and the experience of militarily skillful friends like the Israelis. Further points are offered in my statement for the record.

Obviously, no static measure of relative strength is perfect, but a balanced review of the facts does lend credibility to a statement made by Gen. Frederick Kroesen, Commander of U.S. Army Forces in Europe, and I quote: "It disappoints me to hear people talk about the overwhelming Soviet conventional military strength. We can defend the borders of Western Europe with what we have. I've never asked for a larger force."

This assessment of course assumes adequate readiness and strategic mobility, each of which is bolstered in the budget I have pro-

vided—for example, through protection of the O&M accounts and increased expenditures on prepositioned materiel.

I would add that protection of the O&M accounts while limiting procurement growth provides more maintenance per system, insuring higher operating rates, more readiness, more training, greater proficiency, and more combat power than the procurement-heavy Reagan budget would permit.

The biggest conventional force efficiencies however, are to be made in the Navy.

For the Western Alliance to sustain conventional land and air operations for more than a very few months, the U.S. Navy would have to defend NATO's sea line of communication from Soviet bombers and submarines.

Chairman DOMENICI. Would you hold for just a moment?

Dr. EPSTEIN. Surely.

Chairman DOMENICI. Senator Biden has to leave, and he would like to ask Mr. Rice a question or two.

NO PLACE TO CUT NAVY BUDGET

Senator BIDEN. I apologize for the interruption of what I think is a very insightful statement.

Mr. Rice, I would just like to ask you one question. Is there any place at all you think we can cut the defense budget?

Mr. RICE. Well, I am completely unable to speak to other than our area, which is shipbuilding and naval budgeting.

Senator BIDEN. So your answer is there is no place to cut the Navy budget as relates to shipbuilding?

Mr. RICE. I am not a strategist—

Senator BIDEN. You sounded like one, though. I mean, you talked about strategy and everything.

Mr. RICE. We have a set of directives that the President has promulgated and said, "Conform to this standard." If you conformed to that standard, my answer to you would be no, there is no place to cut the budget.

Senator BIDEN. But you are not commenting on whether the standard is reasonable.

Mr. RICE. I am not going to comment on the standard.

Senator BIDEN. I see. OK.

Thank you, Mr. Chairman.

Mr. Rice, I think you should be in the State Department. You answer like a State Department guy. Thank you very much.

Chairman DOMENICI. I take it you are saying in essence that you do not think the present method of development of the worker force and shipbuilding capacity is adequate.

Mr. RICE. That is absolutely correct.

Chairman DOMENICI. And it is not going to work?

Mr. RICE. It is not going to work.

Chairman DOMENICI. Whether we are spending enough money or not is not the issue. You are saying that we have to fix this process so that there are more people in it and more capacity, because we are asking for more than it is going to deliver.

Mr. RICE. That is absolutely correct, and we can go into that in any detail you want. But there is no process that assesses the ade-

quacy of either a sealift or a shipyard base on a continuing basis and nobody is held accountable. That is the fundamental message.

Chairman DOMENICI. Dr. Epstein, you may proceed.

NAVAL STRATEGY

Dr. EPSTEIN. Thank you.

I am prepared to comment on naval strategy, and that is where I stopped, so let me pick up there.

For the Western Alliance to sustain conventional land and air operations for more than a very few months, the U.S. Navy would have to defend NATO's sea line of communication from Soviet bombers and submarines. This basic Navy mission can be achieved in either of two ways: defensively or offensively. The defensive approach would have the Navy deploy its aircraft carriers south of the so-called GIUK, the Greenland, Iceland, United Kingdom gaps, laying in wait for the Soviets, forcing them to run a series of defensive gauntlets before engaging the carriers and the convoys bound for Europe.

The alternative, the offensive strategy, would be to assemble a largescale naval strike force and steam north of the GIUK, north of Norway, and around the cape, to smash the Soviet threat in its lair, Murmansk.

The Reagan administration's preference for the latter, offensive, approach is clear. In Navy Secretary John Lehman's words, and I quote: "If we are not able to go on the offense against the Soviet submarine and air threat, if we have to wait for them to come to us, then we can't survive * * *. That means going on the offensive. We have got to go north of the GIUK gap, with sufficient power to defeat the threat. If we have to wait for the submarines to come down through the gap, or even around the cape, then we're in a losing position."

Thus echoing the Navy's traditional offensive doctrine, Secretary Lehman defends procurement of two additional large-deck nuclear-powered aircraft carriers, proclaiming the "capability of a 15-carrier, 600-ship Navy to fight and win in areas of highest Soviet capability."

In fact, a 15-carrier fleet would stand very little chance of success in conducting offensive operations in high threat areas against the Soviet Northern and Pacific fleets. Even on assumptions that are uniformly favorable to the U.S. Navy—best plausible case assumptions—more than 20 carrier battle groups overall could be required to execute these operations, while fulfilling assignments in the Mediterranean, Indian Ocean, and Atlantic. At an estimated \$18 billion per carrier battle group, that would cost roughly \$90 billion more than the already astronomical price of the 15-carrier, 600-ship Navy.

Must we bear this burden? No.

If the Navy secures the sea lanes defensively—exploiting land-based airpower, mining, and anti-submarine warfare in the GIUK gaps—the case for even a 15-carrier fleet fades; 12 deployable carrier battle groups—13 carriers overall—is more than sufficient. In securing sea lanes, defensive carrier employment is every bit as efficient as offensive carrier employment. Indeed, any set of assump-

tions that makes offensive carrier employment at Murmansk appear feasible will make defensive carrier employment farther south look easy by comparison. Moreover, to the extent that offensive antisubmarine warfare operations in the North Atlantic are deemed essential, despite their serious potential for nuclear escalation, they can be undertaken by submarines.

The 15-carrier fleet, therefore, fails between the stools. If the Navy really intends to employ aircraft carriers as Mr. Lehman's bash Murmansk rhetoric suggests, then the 15-carrier fleet is not nearly big enough; we must face up to the fact that at least five more carrier battlegroups and perhaps \$90 billion more in defense spending would be required. Luckily for our economy, to secure the sea lanes, it is absolutely unnecessary to employ carriers in this fashion; defensive carrier employment provides equal confidence at far less cost. Using the latter, more efficient, approach in the Atlantic and Pacific, a 13-carrier fleet is more than enough.

I, therefore, would rescind the two carriers authorized in fiscal 1983 and cancel all the associated tactical air, surface, and subsurface naval procurements requested this year.

If I could take just a few more minutes on strategic forces, then I will summarize.

STRATEGIC FORCES

On the land-based leg, first and foremost, a compelling case for more second-strike, land-based, time-urgent, hardtarget kill capability has not been made. To the extent that it can be made, 100 MX missiles based in vulnerable Minuteman silos hardly fits the bill. As reported in the Congressional Record, Air Force calculations show that by 1989 only between 1 and 5 percent of our fixed intercontinental ballistic missile [ICBM] missile silos would survive a well-executed Soviet first strike. That is 10 to 50 surviving MX warheads, as against 3 to 15 surviving Minuteman III warheads—a net gain of between 7 and 35 warheads. At over \$20 billion for the MX missile, the higher of these estimates, the more optimistic of them, implies a price tag exceeding half a billion dollars per surviving warheads—surely, an exorbitant price to pay when mobile Midgetman, Trident/D-5, and the Stealth bomber are in development, and when current strategic forces provide redundant and flexible means of nuclear response.

Moreover, by placing a more lucrative target in a vulnerable silo, MX deployment can hardly improve crisis stability. Indeed, the deployment of a vulnerable hard-target killer invites the most ominous interpretation of the President's ill-considered strategic defense initiative and antisatellite programs, with potentially dire consequences for the ABM treaty and for arms race stability in the years ahead.

Accordingly, MX should be canceled; the strategic defense initiative and related programs should be put on a much tighter leash, as spelled out in my written statement.

Finally, the B-1B will not provide a more cost-effective standoff cruise missile platform than the B-52H. To the extent that a manned penetrating bomber is deemed essential, the B-52H, with a short-range attack missile, or other tactics, will suffice until the ad-

vanced technology bomber's initial operating capability in the early 1990s. Moreover, the B-1B is sufficiently expensive that its procurement may delay, or even endanger, the introduction of that more promising long-term option, Stealth. Accordingly, I would cancel the B-1B as well.

All the above judgments are reflected in the budget alternatives explicitly set forth in my written statement for the record. Their adoption would reduce budget authority by \$23.9 billion, to \$281.1 billion in fiscal year 1985, yielding a real growth rate in budget authority of 2 percent on the CBO's inflation estimate to 4 percent, assuming the much more optimistic DOD deflator.

As you know, I was invited to prepare this alternative budget on quite short notice, and accordingly, only major line items were included. I would be happy to discuss further possibilities, if you would like. A number of them are noted in my written statement for the record.

Thank you very much.

Chairman DOMENICI. Thank you very much.

[The prepared statement of Dr. Epstein follows:]

STATEMENT ON THE FISCAL YEAR 1985
DEPARTMENT OF DEFENSE BUDGET REQUEST

Prepared for
THE SENATE COMMITTEE ON THE BUDGET

Dr. Joshua M. Epstein, Guest Scholar
The Brookings Institution*
February 23, 1984

* The views herein expressed are understood to be solely those of the author and should not be attributed to the Brookings Institution, to its trustees, officers, or other staff members, or to the organizations that support its research.

I am honored by your invitation to address the Senate Budget Committee. I have prepared a written statement which includes a list of proposed alterations to the Administration's FY 1985 Defense Budget Request. The written statement makes reference to certain defense studies of mine. I would ask that the complete written statement and these related items be included in the record. All these materials represent my views alone and should not be attributed to the Brookings Institution. With your permission, I will excerpt from the written statement in my opening remarks.

The Overall Situation

The Administration requests \$305 billion in Budget Authority and \$264.4 billion in Outlays in Fiscal 1985; these represent real growth rates of 13 percent and 9.3 percent, respectively. The broadest question before us, therefore, is clear: are we living in a military emergency which calls for a crash defense spending program? The Administration's rhetoric and budget certainly suggest an affirmative answer; but there is room for doubt.

While the Soviets continue to spend heavily on defense, the rate of spending increase appears to have been consistently over-rated for the period 1976-1981. By contrast to previous estimates, the CIA now holds that "the rise in the total cost of defense since 1976 has been slower--about 2 percent a year. The rate of growth of overall defense costs is lower because procurement of military hardware--the largest category of defense spending--was almost flat in 1976-1981. New information," the Agency continues, "indicates that the Soviets did not

field weapons as rapidly after 1976 as before. Practically all major categories of Soviet weapons were affected--missiles, aircraft, and ships."

While Soviet growth has been slower than previously estimated, U.S. spending was greater than the Administration would have us believe; Secretary Weinberger continues to speak of a "decade of neglect." In fact, the "decade of neglect" saw cumulative American outlays of over \$1.8 trillion in constant FY84 dollars. And while--at least on the CIA's old estimates--the Soviets outspent the U.S., the NATO Alliance has outspent the Warsaw Pact consistently since 1965. The fact that Soviet procurement--which dominates the investment accounts--has been flat for half the "decade of neglect" casts doubt, moreover, on Mr. Weinberger's forceful contentions that Soviet military investment would ultimately nullify NATO's greater aggregate expenditure. At this most general of levels, then, Soviet growth has been over-rated while Western efforts have been understated. But, the assessment underlying this year's budget request rests on more specific failures of analysis.

Failure to count Allies, for example, extends beyond overall budget comparisons. While Secretary of the Navy John Lehman bemoans the loss of "maritime superiority," the U.S. and its Allies built almost twice as many major combat ships as the USSR and its Allies during the "decade of neglect." Similarly, ratios of U.S.-to-Soviet manpower, tanks, and many other classes of combat hardware are far lower than the relevant NATO-to-Warsaw Pact ratios.

Failure to standardize units yields misleading comparisons. The number of Soviet divisions is often compared to the (much smaller) number of U.S. divisions. Seldom is it noted that the U.S. active division is almost 60 percent larger in manpower, 40 percent more expensive, and, by the Army's own measures, up to 50 percent more combat effective than its Soviet counterpart.

Failure to weigh geographical factors can further cloud the picture; large portions of the Soviet Navy are icebound much of the year and its Baltic and Black Sea Fleets would have to traverse vulnerable choke points to break into the open ocean where, despite recent progress, they would lack underway replenishment or fleet air defense comparable to the U.S. Navy's. Yes, the Persian Gulf is a great distance from the United States. But, between the Soviet border and the oilfields of Iran stand two formidable mountain ranges and an extremely limited and vulnerable system of roads.

The failure to count what counts is exemplified by nuclear comparisons noting the Soviet "edge" in strategic launchers while ignoring the U.S. lead in deliverable warheads. Comparisons of East-West tank inventories often ignore offsetting Western predominance in antitank weaponry and close air support. What makes all the bean-counting so supremely unconvincing is its glaring inconsistency with the Services' own budget requests. For example, if the Navy really believed that the category-by-category comparison of ship inventories was meaningful, there would be no basis whatever for further acquisition of large-deck attack aircraft carriers since the

U.S. (alone) already "leads" the USSR (and its allies) to the tune of 13 to zero!

In general, when the Services ask for money, they want quality; but all too often, they assess the Soviet threat as though quantity alone mattered most. If only the numbers matter, then let us hear no more of quality. And if quality is worth the money, then let us not assess the threat as though it all came down to bean counting!

Similarly, we are asked to spend billions on battlefield maintenance and support, on theater logistics and mobility, on training, on command, control, communications, and intelligence (C³I). If the resulting levels of sustainability, personnel skill, and overall flexibility are worth these billions, then their benefits should be reflected in our assessments of the military balance. More often than not, they are ignored and supplanted by bean-counting in the so-called "threat briefing."

I think it is fair to say that if all relevant parties are counted (allies, etc.); if apples are compared to apples and oranges to oranges; and if the U.S. takes some credit for the operational and qualitative advantages on which we spend so much, the case for a crash military buildup weakens. I hasten to stress that I am not arguing that America can afford to be weaker military--it cannot. The question before us, however, is whether America can be strengthened more efficiently--it can.

Efficiency

The notion of efficiency presumes some set of goals or objectives; it only makes sense to talk about efficiency in doing something. What are the basic jobs our forces are supposed to do? What's required to do those jobs? Unfortunately, the goals of the Reagan buildup have never been especially clear; at least the connection between goals and forces has not been clear. On the contrary, the Administration talks about "protracted nuclear war" while deploying the MX missile in a basing mode which invites its early destruction; they talk about many simultaneous contingencies while underfunding the strategic lift necessary for many concurrent reinforcements.

The main missions which account for the bulk of our spending are, in fact, not difficult to identify. In the conventional sphere, they are the defense of Western Europe, the defense of the Persian Gulf, and to a lesser extent the defense of South Korea. The Navy's primary conventional mission is to secure the sea lanes to these theaters of war. Looming behind these capabilities is the *eminence grise*, nuclear deterrence.

If I may say a few words about each, the priorities reflected in my alternative budget proposal may be clearer.

The Persian Gulf

Someone once noted that great harm had been done by politicians using maps drawn on too small a scale. The Persian Gulf may be a case in point. It is true that the Soviets share a border with Iran and that the number of Soviet divisions in the southern military districts

of the USSR exceeds the number of U.S. divisions comprising the current Rapid Deployment Force (i.e., U.S. Central Command). However, geographical proximity does not per se constitute Soviet military access, and static prewar "bean-counting" cannot reflect dynamic wartime effectiveness. The latter always depends on operational factors such as warning and the readiness to use it, distance, terrain, available avenues of advance (and their vulnerability), logistics, coordination, reconnaissance, flexibility, combat technology, and troop skill. That fact is of prudent concern to U.S. planners, but is virtually neglected when assessing the Soviet threat. When such factors are accounted for on both sides, in a balanced and systematic way, the prevalent assessment is seen to be overly pessimistic. (For an operational analysis of the U.S.-Soviet conventional balance in the Persian Gulf, and a detailed argument that direct conventional defense is feasible I respectfully submit for the record my "Soviet Vulnerabilities in Iran and the RDF Deterrent," International Security, Vol. 6, No. 2 [Fall 1981].) ^{1/}

To make a long story short, if it gets there in time, the current RDF should present an imposing deterrent to Soviet aggression. On the other hand, if it gets there too late, then not even the Administration's much larger planned RDF is likely to succeed in driving out an entrenched Soviet force. Thus, rather than increasing the force's size, our highest priority should be to increase its speed. This is reflected in my budget alternative, which fully funds existing airlift, prepositioning, and strategic tanker programs; it further relieves

^{1/} See p. .

global outsized cargo constraints by accelerating the prepositioning program in Europe, and by cancelling the redundant C-17 in favor of increased procurement of more cost-effective fast sealift ships.

These changes follow from my view that a strategy of direct conventional defense is preferable to such alternatives as "Horizontal Escalation," whose inherent shortcomings and risks are discussed in the second of my submissions for the record.^{1/}

Europe

Similarly in Europe, there are definite improvements to be made, but the situation is not yet completely out of hand. Although our Allies can and should meet their spending growth commitments, NATO does consistently outspend the Warsaw Pact on defense. A greater percentage of NATO's (larger) aggregate defense expenditure is directed at the European theater, while upwards of 15 percent of Soviet spending is directed at China; our Allies are, in my view, more reliable than those of the Soviets. In general, Western active units receive more training than Pact units and Western training is, in general, substantially more realistic; it benefits from more combat experience and the experience of militarily skillful friends (e.g., Israel). In a number of areas NATO enjoys a militarily significant numerical edge, and in a variety of others, the West continues to maintain a substantial qualitative lead (as suggested in this year's JCS Posture Statement). NATO active divisions are--on average--a good deal larger than their Soviet counterparts and are rated--by the Army--as being more combat effective--50 percent more for U.S. Armored Divisions on the defensive.

^{1/} See p. .

The defender, moreover, enjoys certain advantages: the opportunity to fight from prepared--even fortified--positions (while the attacker must come into the open, exposing himself to fire, to advance) and the chance to fight on familiar terrain (which, in NATO's case, would canalize Soviet armor onto some poor tank country) are among them.

Obviously, no static measure of relative strength is perfect; I submit for your interest a study of some dynamic areas (e.g., flexibility, centralization of command, troop initiative), of concern to the Soviets themselves.^{1/} Neither, of course, will this complete the picture, but a balanced review of the facts does lend credibility to a statement made by General Frederick Kroesen, Commander, U.S. Army Forces in Europe on March 16, 1983.

"It disappoints me to hear people talk about the overwhelming Soviet conventional military strength. We can defend the borders of Western Europe with what we have. I've never asked for a larger force."

This assessment of course assumes adequate readiness and strategic mobility, each of which is bolstered in the budget I have provided--for example, though protection of the O & M accounts and increased expenditure on Prepositioned Materiel Configured to Unit Sets (POMCUS) in Europe. The Soviets' improving long-range tactical air capability is addressed by full funding of the F-16, continued production of the F-15 (though at a slower rate), air defense modernization, and

^{1/} See p. .

increased funding for airbase survivability. Ground forces modernize, but at a more balanced pace. Stinger, Vulcan, and Chaparral handle the Short-Range Air Defense (SHORAD) responsibilities while a follow-on more cost-effective than DIVAD is competed.

Protection of the O & M accounts while limiting procurement growth provides more maintenance per system, ensuring higher operating rates, more readiness, more training, greater proficiency, and ^{is a} combat power than the procurement-heavy Reagan budget would permit.

The biggest conventional force efficiencies, however, are to be made in the Navy.

Naval Forces

For the Western Alliance to sustain conventional land and air operations for more than a very few months, the U.S. Navy would have to defend NATO's sea line of communication (SLOC) from Soviet bombers and submarines. But this primary naval mission might be achieved in either of two ways: defensively or offensively. The former tactic would have the Navy deploy its aircraft carrier battle groups (CVBGs) south of the so-called GIUK (Greenland-Iceland-U.K.) gaps, laying in wait for the Soviets, forcing them to run a series of defensive gauntlets before engaging the carriers and Europe-bound convoys. The alternative would be to assemble a large-scale offensive naval strike force and steam north of the GIUK, north of Norway, and 'round the Cape to smash the Soviet threat in its lair, Murmansk.

The Reagan Administration's preference for the latter, offensive, approach is clear. In Navy Secretary John Lehman's words:

"If we are not able to go on the offense against the Soviet submarine and air threat, if we have to wait for them to come to us, then we can't survive.... So we have got to secure and virtually eliminate--we'll never completely eliminate--but virtually eliminate the serious threat to those lines. That means going on the offensive. We have to go north of the GIUK gap, with sufficient power to defeat the threat. If we have to wait for the submarines to come down through the gap, or even around the Cape, then we're in a losing position."

Thus echoing the Navy's traditional offensive doctrine, Secretary Lehman defends procurement of two additional large-deck nuclear-powered aircraft carriers, proclaiming the "capability of a 15 carrier 600 ship Navy to fight and win in areas of highest Soviet capability."

In fact, a 15 carrier fleet would stand very little chance of success in conducting offensive operations in "high threat" areas against the Soviet Northern and Pacific Fleets. Even on assumptions that are uniformly favorable to the U.S. Navy--"best plausible case" assumptions--more than 20 carrier battle groups overall could be required to execute such operations, while fulfilling assignments in

the Mediterranean, Indian Ocean and Atlantic. At an estimated \$18 billion per carrier battle group, that would cost roughly \$90 billion over the already astronomical price of the 15 carrier 600 ship Navy. Must we bear this burden? No.

If the Navy secures the sea lanes defensively--exploiting land-based airpower, mining, and anti-submarine warfare in the GIUK gaps--the case for even a 15 carrier fleet fades; 12 deployable carrier battle groups (13 CVs overall) is more than sufficient. In securing sea lanes, defensive carrier employment is every bit as efficient as offensive carrier employment. Indeed, any set of assumptions (e.g., about "softening-up" Soviet defenses) that makes offensive carrier employment at Murmansk appear feasible will make defensive carrier employment south of the GIUK look easy by comparison. Moreover, to the extent that offensive anti-submarine warfare operations in the north Atlantic are deemed essential--despite their inordinate potential for nuclear escalation--they can be undertaken by submarines.

The 15 carrier fleet therefore "falls between the stools," as it were. If the Navy seriously intends to employ aircraft carriers as Mr. Lehman's--bash Murmansk--rhetoric suggests, then the 15 carrier fleet isn't nearly big enough; we must face up to the fact that at least 5 more carrier battlegroups, and perhaps \$90 billion more in defense spending, would be required. Luckily for our economy, to secure the sea lanes, it is absolutely unnecessary to employ carriers in this fashion; defensive carrier employment provides equal confidence at far less cost (without precluding

offensive submarine operations, if they are necessary). Using the latter--far more efficient--approach, in the Atlantic and Western Pacific, a 13 carrier fleet is more than enough.

I, therefore, would rescind the two carriers authorized in fiscal '83, and cancel all the associated tactical air, surface, and subsurface naval procurements requested this year.

Strategic Forces

First and foremost, a compelling case for further second-strike land-based time urgent hard target kill capability has not been made. To the extent that it can be made, 100 MX missiles based in vulnerable Minuteman silos hardly fits the bill. As reported in the Congressional Record (May 18, 1983), Air Force calculations show that by 1989, "only between 1 and 5 percent of our fixed intercontinental ballistic missile (ICBM) silos would survive ... a well-executed Soviet first strike attack on existing U.S. silos." That is 10 to 50 surviving MX warheads (at 10 per missile) as against 3 to 15 surviving Minuteman III warheads (at 3 per missile), a net gain of between 7 and 35 warheads. At over \$20 billion for MX, the higher of these estimates implies a price tag exceeding half a billion dollars per surviving warhead, surely an exorbitant price to pay when mobile Midgetman, Trident/D-5, and the Stealth bomber are in development and when current strategic forces provide redundant and flexible means of nuclear response.

These estimates do not take account of silo hardening, or the possibility that a Soviet first-strike might not be quite so well-executed (though a prudent planner would generally assume so). On

these topics, former Secretary of Defense Harold Brown pointed out on November 13, 1981

"that further hardening, if it is at all feasible, will not be available before the Soviets can install a new generation of guidance systems. The Soviets, using technology that they have already developed, will surely be able by that time to improve the accuracy of their ICBMs further, so that in the case of a nuclear war the hardened MX silos will find themselves in the fireball and in the crater left by the nuclear explosion of Soviet warheads; the silos would not survive such an experience."

Finally, by placing a more lucrative target in a vulnerable silo, MX deployment can hardly improve crisis stability.

Indeed, the deployment of a vulnerable hard-target killer invites the most ominous interpretation of the President's ill-considered Strategic Defense Initiative and Anti-Satellite Program, with potentially dire consequences for the ABM Treaty and for arms race stability in the years ahead.

MX, accordingly, is cancelled; the strategic defense initiative is allowed zero real growth in development funding, while the strategic air and space defense programs are kept in development only (i.e., procurement funding is denied).

Finally, the B-1B will not provide an appreciably better or more cost-effective standoff ALCM platform than the B-52H. To the extent that a manned penetrating bomber is deemed essential, the B-52H/SRAM (Short-Range Attack Missile) or B-52H with an SLBM (Submarine-Launched Ballistic Missile) cross-target will suffice until the Advanced Technology Bomber's initial operating capability in the early 1990s. Moreover, the B-1B is sufficiently expensive that its procurement may delay, or even endanger, the introduction of the more promising long-term option, Stealth. Accordingly, the B-1B should be cancelled.

Summary

The above judgements are reflected in the budget alternatives I submit for your consideration. Their adoption would reduce Budget Authority by \$23.9 billion to \$281.1 billion, yielding a real growth rate in Budget Authority of 2 percent (assuming the CBO's 6.7 percent National Defense purchases deflator) to 4 percent (assuming the DOD's 4.6 percent deflator) in FY85.

As you know, I was invited to prepare this alternative budget on very short notice. Accordingly, only major line items were included. In addition to providing outlay estimates, a more refined analysis would examine further possible additions and reductions, the following included: limit the growth in military end-strength to account for the recommended procurement cuts; trace through the O & M account, cancelling only those additions truly made superfluous by the cancellation of new weapon systems; cancel Energy Department projects made superfluous by the recommended cuts in strategic programs; and

limit the growth rate of military pay. Against these possible further reductions, the Committee may wish to consider upgrading the National Guard and Reserve, investing in light field fortifications and terrain modifications in Europe, and increased procurement of 30 mm. gun pods.

If the Committee insists on consistent and balanced advocacy--advocacy which explicitly relates commitments, requirements, and alternatives--our military and economic strength can only increase.

MAJOR LINE ITEM ALTERATIONS TO THE FISCAL 1985 DEPARTMENT OF DEFENSE BUDGET*

Dr. Joshua M. Epstein

<u>Program</u>	<u>Procurement Quantity</u>		<u>Change in Budget</u>
	<u>Request</u>	<u>Proposed Alternate</u>	<u>Authority (millions)</u>
<u>Land Forces</u>			
M-1 Tank	720	600	-322.6 ^a
M-2 Bradley Fighting Vehicle	710	600	-200.0 ^c
DIVAD Divisional Air Defense Gun	132	0	-638.9 ^a
Army Helicopter Improvement Program			-300.0 ^c
<u>Naval Forces</u>			
Nuclear-powered Attack Carriers			-14.1 ^a
Carrier SLEP (deferral) ²			-800.8 ^a
CG-47 Aegis Cruiser	3	2	-1,055.7 ^a
DDG-51 Destroyer (deferral)	1	0	-1,173.4 ^a
SSN-688 Nuclear-powered Attack Submarine	(4)	(3)	-1,100.0 ^c
LSD-41 Landing Ship Dock ³	(2)	(1)	-1,001.0 ^a
F-14	24	0	-286.7 ^a
F-14D			-207.9 ^a
Tomahawk Cruise Missile	180	124	-453.2 ^a
Battleship Reactivations	1	0	
<u>Air Force</u>			
F-15	48	36	-600.0 ^c
C-17			-129.3 ^b
MX	40	0	-5,002.2 ^a
B-1B	34	0	-8,220.6 ^a
<u>Force-Wide</u>			
Strategic Defense/Anti-Satellite			-1,096.8 ^b
Advanced Conventional Munitions, LANTIRN ⁴ (hold in RDT & E), and Chemical Warfare			-1,333.4 ^a
Supporting Procurement Items			-3,000.0 ^c
<u>Total Reductions</u>			<u>-26,936.6</u>
<u>Additions</u>			
Fast Sealift (PD-275 or SL-7)			+1,000.0
POMCUS ⁵ Acceleration			+2,000.0
Airbase Survivability			+38.0 ^b
<u>Total Additions</u>			<u>+3,038.0</u>
<u>Net Change</u>			<u>-23,898.6</u>
<u>Total Budget Authority</u>			<u>+281,101.4</u>

Resulting Real Growth Rate in Budget Authority

- a. 4% (Assuming DOD's Deflator of 4.6%).
- b. 2% (Assuming CBO's Deflator of 6.7%).

* Superscripts a, b, and c indicate the source of data used in computing changes in Budget Authority. In footnotes 1-5, acronyms are explicated and commentary is offered where necessary.

- SOURCES:
- a. Calculated from data presented in Program Acquisition Costs by Weapon System, Department of Defense Budget for Fiscal Year 1985. (Estimates include initial spares, and procurement-related Research, Development, Test and Evaluation (RDT & E) and Military Construction).
 - b. Calculated from data presented in Secretary of Defense Caspar W. Weinberger, Annual Report to the Congress for Fiscal Year 1985.
 - c. Option presented in Congressional Budget Office, Reducing the Deficit: Spending and Revenue Options, Part III, Feb., 1984.

- NOTES:
- 1. All estimates are in FY85 dollars. Budget Authority reductions are estimated from procurement quantity reductions using the factor $\left(1 - \frac{\text{Proposed QY}}{\text{Requested QY}}\right)$.
 - 2. All deferrals are for one year. SLEP is the acronym for Service Live Extension Program.
 - 3. These SSN and LSD reductions are assumed to be partially offset (by extending the service lives of submarines and LSDs) in the \$1,100 billion net reduction.
 - 4. LANTIRN is the acronym for Low Altitude Navigation and Infrared System for Night.
 - 5. POMCUS is the acronym for Prepositioned Materiel Configured to Unit Sets.

Chairman DOMENICI. Senator Sasser, I understand that Senator Chiles would like to ask a few questions. I have to go to a Public Works hearing on uranium mill tailings, and I will let you preside. Could you do that for a few minutes, and he will be back, so he can ask some questions?

Senator SASSER. Mr. Chairman, I am confident I can preside over the committee here, since I am going to be the only one here, and I will be delighted to do that.

Chairman DOMENICI. I do not pass judgment on that. I think you could preside over it, even if everyone were here. But you do me a great favor, nonetheless, by doing that.

Senator SASSER. Thank you. I would be delighted to do it.

Chairman DOMENICI. Thank you very much.

[Whereupon, Senator Sasser assumed the chair.]

MX UNSUCCESSFUL ARMS CONTROL LEVER

Senator SASSER. Dr. Epstein, I want to thank you this morning for so very incisive testimony. I think you have touched on some points that desperately need to be made.

Let me ask you some questions here, regarding some specific weapons systems. During the debate on the MX missile system last year here in the Senate, the administration came up here and argued that congressional approval for funding of the MX missile was absolutely necessary if we were going to get the Soviets to negotiate any sort of arms control agreement. They were saying at that time, sort of whispering, "Well, the MX is a bargaining chip." Well, funding was approved for the initial production of 40 MX missiles, yet not only do we not have an arms accord; we are not even conducting serious negotiations with the Soviet Union.

In light of these developments, should we continue to approve funding for this missile, which many experts argue is inherently destabilizing and which we are putting in the old silos, taking Minuteman missiles out and putting new MXs in? What is your response to that?

Dr. EPSTEIN. Absolutely not. I agree with your interpretation, and events confirm, I think, your view—if I am not mistaken—that the MX has been an eminently unsuccessful arms control lever, if that required confirmation.

FORCE STRUCTURE OF NATO

Senator SASSER. With regard to the European theater, you quoted a moment ago from, I think, our NATO commander in Europe—anyway, you were quoting an American General—

Dr. EPSTEIN. The Commander of Army Forces in Europe, yes.

Senator SASSER [continuing]. In which he stated that he felt the force level that he had in Europe at the present time were ample for satisfactory defense.

In the 1950's, the Eisenhower administration, as you know, deliberately pursued a policy of deemphasis of large conventional forces in favor of nuclear forces. I remember then, the Secretary of State, Mr. Dulles, was talking about massive retaliation.

Now, one of the reasons advanced for this policy was that we could get more bang for the buck by spending it on nuclear weap-

ons rather than conventional weapons. Now, in the 1980s, there is a feeling that a similar policy might be being pursued in Europe with catastrophic results and that our only response in Europe might be nuclear, thereby guaranteeing the thing we want to avoid.

My question to you is, do you believe we have the proper mix of forces in Europe that would prevent a conflict from rapidly escalating to a nuclear response? And as a corollary to that, Dr. Epstein, let me just ask this: Has the installation of the Cruise and Pershing missiles made the probability of the escalation to a nuclear response greater, or has it diminished the possibility of nuclear escalation?

INSURE ADEQUATE CONVENTIONAL FORCES TO DETER AGGRESSION

Dr. EPSTEIN. Well, on the mix, let me say this, and let me try, in so doing, to clarify the sense of General Kroesen's remark.

I think that the force structure of NATO—that is to say, the number and composition, of its divisions, tactical air wings, support forces, and the rest—is adequate to deter aggression at the conventional level in Europe.

I do think that there are weaknesses in NATO's posture, mostly in the areas of readiness and sustainability, that can be corrected, but not by emphasizing further procurement to the extent as the Reagan budget does.

In general, I believe the most plausible path to a nuclear conflict is not by a bolt-from-the-blue nuclear first strike but by a failure of conventional deterrence. And so I think the first priority for those of you responsible for framing the defense budget is to insure adequate conventional forces to deter aggression: If you are really interested in preventing nuclear war, make sure that conventional war does not break out.

Should conventional war occur, it is difficult to assess the contribution of Pershing II and GLCM in reducing the probability of escalation, but I would say that of the two systems, the Pershing II contributes less to stability, because it has certain of the same kinds of properties as MX, and presents an attractive target to an adversary like the Warsaw Pact in the event of conventional aggression.

SOVIET DIVISIONS VERSUS U.S. DIVISIONS

Senator SASSER. I have been listening to the Defense Intelligence Agency people come up here for 7 or 8 years, and they will put up their charts, and they will talk about the Soviet divisions versus the U.S. divisions. But as you have pointed out here today, a U.S. Army division is twice as large as the Soviet division in manpower—

Dr. EPSTEIN. No; not quite.

Senator SASSER. Delineate, if you would, the distinction between a U.S. Army armored division and an armored division of the Soviet Union.

Dr. EPSTEIN. All right. A U. S. active armored is about 60 percent larger in manpower. The cost difference is at least 40 percent. By the Army's own measures—these are called armored division

equivalents—the U.S. armored division, operating on the defensive is 50 percent stronger than a Soviet tank division, their nearest equivalent, operating on the offensive.

So the mere comparison of numbers of divisions is a very unrevealing estimate of the ground balance—nor does the mere comparison of divisions, even when normalized to this standard, take into account NATO's superiority in the area of close air support, or such other factors as the capacity to operate on the defensive from fortified positions, or to operate in terrain more familiar to the defender than to the aggressor.

UNITED STATES LEADS IN TECHNOLOGY AND INDIVIDUAL SKILL

Other things that are not reflected even in this normalized comparison of the divisions is individual skill. Just to give you one example from military history, which is really lacking in all of the budget comparisons and bean counts, consider air-to-air warfare. In World War II in the Pacific, American pilots lost 1 plane for every 10 Japanese planes they shot down—an exchange ratio of 10-to-1. In Vietnam, the ratio reached 12-to-1. In the Middle East War in 1967, the Israelis scored a ratio of 20-to-1; in 1973, it was 40-to-1; in Lebanon, the Israelis achieved over 80-to-1.

What explains these kinds of differences—differences that clearly outweigh even very large numerical disparities? What explains them primarily is skill, individual pilot skill, and technology.

Well, if one looks at the difference between United States and Soviet air-to-air technology, there is very little dispute that the United States retains a serious lead. More important, NATO pilots fly over twice as much as their Warsaw Pact counterparts. We have benefited from much more combat experience since the war than the Soviets have acquired, and from the experience of friends like the Israelis, who have done very well and from whom we have learned a great deal. We have much more sophisticated simulators; training is much more realistic. Historically, these things have added up to enormous multipliers in the air, and yet we hardly ever get any credit for them. Virtually all we hear about is the bean count. And there are analogs in almost every area of the military balance, divisions included.

I think it is time if we are going to wisely allocate our resources, to have adequately informed, plausible accounts of what matters in military conflicts, and have these intelligently incorporated in our decisionmaking. And they are just woefully absent.

Senator SASSER. You have suggested in your testimony, or stated explicitly, that the United States in conjunction with its NATO allies, has been outspending the Soviet Union since 1962.

Dr. EPSTEIN. 1965—sorry.

NO NEED FOR \$305 BILLION DEFENSE BUDGET

Senator SASSER. And you have indicated to us something that I think some of us already knew, that for example, an Army division is larger than its Soviet counterpart, much more effective, on a 1-on-1 division-against-division basis, than its Soviet antagonist.

You have indicated to us something that we know, and which has been proven, in at least two or three wars, and that is, we

enjoy a significant qualitative advantage over the Soviets, or their satellites, with regard to air-to-air combat aircraft. You left out the Korean war. In that situation, American-piloted fighter aircraft were going up against Russian-built aircraft, and many times, piloted by Russians, with Chinese markings on them at that time. And there, the kill ratio was very large.

Taking the overall thrust of your testimony today, Dr. Epstein, do you think we need a \$305 billion budget for defense, as suggested in President Reagan's budget? I noticed last night, in his news conference, he was adamant that there would be no cuts in defense. Do you think we need this \$305 billion, and if we do or do not, expand on your rationale or justification as to why we do or do not.

Dr. EPSTEIN. I do not believe we need to spend \$305 billion, as the President has requested—

Senator SASSER. Let me interrupt you just a moment, to interject some of my own thoughts here, if I may. You know, we came to a consensus in this country before the Reagan administration ever came into power as I recall, 1978, that we needed to increase defense expenditures. And the Carter administration, as I recall at that time, entered into an agreement with our NATO Allies that we would increase defense spending 3 percent a year in real dollars, corrected for inflation. Then, it became an issue in the 1980 elections. And since 1980, we have increased defense spending in almost a jackrabbit fashion, and now we want to increase it by 13 percent in this coming budget.

And what we are seeing, I think, is a shattering of a consensus that has developed in this country over 5 or 6 years that, yes, we did need to increase defense spending, but this administration is destroying that consensus by trying to increase it too fast.

Now, in view of my statement and your initial statement that we do not need a \$305 billion defense budget, go ahead and tell us why we do not, and where we might make some cuts.

DEFINE BASIC MISSIONS FOR DESIGNING MILITARY FORCES

Dr. EPSTEIN. Well, the written statement discusses at greater length why we do not, but the way I arrive at the judgment is to ask myself what are the major commitments for which we are buying military forces. The Reagan administration has done more than any other administration that I can remember, to blur this question. The Navy keeps talking about "global warfare;" the administration talks about an unspecified number of simultaneous contingencies. I think that it is possible to define the basic missions for which we should be designing the forces, and those missions are: The defense of Western Europe, the defense of the Persian Gulf, the reinforcement of South Korea, sufficient strategic mobility to accomplish those tasks, and nuclear deterrence.

When I go through these contingencies—that is, when I do what you might think of as contingency-based budgeting—I try to incorporate the kinds of things we know from military history and impute to each side factors of attrition, exchange ratios, and the like that seem plausible in light of what we spend, and how we train, and in light of the differences in our force structure. I think I get a more meaningful picture of these theater balances and con-

tingency requirements than can be obtained by comparing budgets overall, or spending trends or tank counts or anything else. That is how I arrive at my estimate.

When I go through this exercise, there are places that I think we can cut. Let me just note what some of them are.

The basic force driver in the Navy is the carriers, and once you have made a decision on the 15-carrier fleet, much of the rest of the Navy budget follows. As I have said, I think the 15-carrier fleet is neither here nor there. If one really wants to do what John Lehman talks about, then 15 carriers is not nearly enough, and if one does not want to do what John Lehman talks about—and I do not think we should try—then 15 carriers is not necessary. And accordingly, I cut out two carriers. When you do that, a lot else comes with the carriers—the Aegis cruiser, the DDG-51 destroyer, at least one SSN-688 nuclear-powered submarine—

Senator SASSER. The point is, you do not put a nuclear carrier out there by itself.

Dr. EPSTEIN. Exactly.

Senator SASSER. If you buy the nuclear aircraft carrier, then you have got to buy the aircraft to go aboard it—

Dr. EPSTEIN. Exactly.

Senator SASSER [continuing]. You have got to buy the Aegis cruiser, and the destroyers—

Dr. EPSTEIN. And the manpower, and everything else.

Senator SASSER [continuing]. All to protect that carrier.

Dr. EPSTEIN. Precisely.

Senator SASSER. So, when you get through, what have you got—about \$14 or \$15 billion, floating around, counting the aircraft carrier, the airplanes, and the support vessels?

Dr. EPSTEIN. I do not have a subtotal for that, but it looks like—

Senator SASSER. Mr. Rice is nodding, yes, as if he has got—that is about what it is, about \$14 or \$15 billion.

Dr. EPSTEIN. Are you referring to the whole carrier battle group?

Senator SASSER. Yes.

STRATEGIC FORCE SAVINGS

Dr. EPSTEIN. About \$18 billion. I thought you meant my entire subtotal of Navy cuts. In any event, that is one large lump of savings. Another large lump of savings is in the strategic forces, where again, one should look at contingencies, and not just count weapons and compare them to the other side's weapons. I try to elaborate a set of targets that I would like to be able to destroy in the event that I am first struck by a well-executed Soviet attack. When I do that, I find it hard to justify so rapid an increase, so precipitous a deployment of a weapon like MX, which contributes so very few surviving warheads to my retaliatory capability.

In the other conventional areas, I would slow procurement of the M-1, slow procurement of the M₂, and cancel the DIVAD gun; in the Air Force, while I would fully fund the F-16 program, add money to airbase survivability, spend on further prepositioning, I would cut the F-15 back, cancel the C-17—fast sealift is much more efficient—

Senator SASSER. Fast sealift is more efficient—

OTHER AREAS OF SAVINGS

Dr. EPSTEIN [continuing]. Than further airlift, yes. Perhaps Mr. Rice would concur in that view.

I have submitted a list with further items. There are other things that are not included in the list that I think are worth mentioning. As I say, I only had time to really look at major line items, but for example, a more refined analysis would examine other possibilities—limiting the growth of military end strength is one. If you are going to cut procurement, then you can probably live without the manpower that that procurement had dictated in the first place. If I am not going to buy the ships, then I am not going to need the personnel for the ships. So, we should really trace through the budget and find where the corresponding manpower savings are to be made.

Similarly, one could—I hesitate to suggest it—but you could go through the O&M account, canceling only—and I stress only—those additions truly made superfluous by the cancellation of new weapons. You could cancel Energy Department projects, again, made superfluous by my recommended cuts in the strategic programs, warhead budgets, this sort of thing. And I think there is a question, at least, to be raised about the rate of increase in military pay.

Those are the kinds of things you might consider reducing more. I have given you an example of the line items I would cut. There are further investments you might make. You might increase field fortifications. I think there are big returns to be gained from that in Europe. Increased procurement of gun pods over precision-guided munitions is another promising option.

I hope that addresses your question.

COMPETENCE OF AMERICAN MILITARY ESTABLISHMENT

Senator SASSER. I may be getting out of your area of expertise, but I want to ask one more question, and then I am going to defer to Senator Chiles.

There has been a spate of articles in the press recently about the competence, the basic competence, of the American military establishment, and historical reviews have been made in which it is detailed our military failures since the Second World War—Korea, Vietnam, the failure of the rescue mission in Iran, the failure in Lebanon, et cetera, et cetera.

Do you have a judgment on the competence of the American military establishment, and particularly, the competence of our military establishment vis-a-vis that of the Soviet Union?

Dr. EPSTEIN. I think what these unbalanced and somewhat jaded attacks on American military performance fail to recognize is the great, persisting success of the American military in doing the basic job it is designed to do: deterring war with the Soviet Union.

The U.S. military and its NATO Allies, in my view, enjoy a profound success every single day in Europe, because we are at peace in Europe. I do not think that these admittedly unfortunate and to some extent incompetent performances in Iran and elsewhere

really reflect the capacity of our forces to execute this basic mission against the primary adversary, the Soviet Union, either in Europe, in the Persian Gulf, or anywhere else.

Senator SASSER. Thank you, Dr. Epstein.

Senator CHILES?

SOVIET GEOGRAPHICAL ADVANTAGE IN THE PERSIAN GULF

Senator CHILES. Dr. Epstein, much has been made in recent years of the Soviet geographical advantage in the area of the Persian Gulf. The invasion of Afghanistan has been used as an example of the Soviet ability to easily exert their will in this area.

In your written statement, you appear skeptical of this notion. I wonder if you would comment and include in your comments your assessment of the RDF's current capability to defend and protect the Persian Gulf oilfields, our rapid deployment force, and what if anything we should do to enhance its capabilities.

Dr. EPSTEIN. Someone once said that great harm had been done by politicians using maps drawn on too small a scale. I think the Persian Gulf is a case-in-point. It is true that the Soviets share a border with Iran, and that the number of Soviet divisions north of Iran exceeds the number of U.S. divisions comprising the rapid deployment force today. But division counting is not conclusive and geographical proximity truly does not constitute Soviet access

RAPID DEPLOYMENT FORCE CAN DELAY SOVIET ADVANCE

My written statement goes into this in some detail, and I have submitted for the record a very detailed analysis of the conventional balance in the Persian Gulf. But one of the things that people do not seem to recognize is how terribly limited the transportation system is from the Soviet Union to the oilfields of Iran. There are on the order of a dozen roads into Iran, and five from central Iran over the Zagros Mountains to the oilfields. The distances are enormous. The Soviets have undertaken far less challenging logistical problems with something less than virtuosity, in Czechoslovakia, for example. The terrain is terrible. The roads go through places that could be severely choked off. I think the current rapid deployment force, if it exploits these geographical advantages, can delay the Soviet advance enough to insert an adequate counterpose in the south. But I have to stress that, really, everything hinges on time. If these operations are not undertaken with sufficient rapidity, and the Soviets are permitted to entrench themselves in the south, then not even a larger rapid deployment force would be sufficient to drive them out.

MORE SEALIFT FOR SUSTAINING CAPABILITIES

The important thing is to get there rapidly enough to execute these defensive kinds of operations, in the mountains of the north, and in the mountains of the south.

We should therefore emphasize speed. I think we can improve the forces' mobility by acquiring more sealift and cancelling the redundant—

Senator CHILES. Well, you say "speed," and then you say "sealift." Normally, if you say "speed" to me, I am thinking of airlift.

Dr. EPSTEIN. No. Airlift is sufficient for the leading edge of the rapid deployment force—

Senator CHILES. I see Mr. Rice thinks sealift is a little better.

Dr. EPSTEIN. Well, maybe I could go into that. Allow me to continue. I think you want more sealift for sustaining capabilities. The leading edge of the force can get there, can entrench itself, but to continue an adequate flow of manpower and materiel, you need sealift. Sealift is more efficient than airlift for this continuing reinforcement. And when I say the current rapid deployment force is adequate to handle the Soviet force, that assumes that the entire current rapid deployment force, and its sustaining stocks, and the rest, get there. I think we have allowed the mix too much bias in the way of airlift, and sealift is the more efficient way to fill out the entire reinforcement schedule—if that is clear.

Senator CHILES. So you are talking about a resupply and building up the force.

Dr. EPSTEIN. Right; there is a forward deployment.

Senator CHILES. Mr. Rice?

NEED TO SUSTAIN FORCES ONCE IN PLACE

Mr. RICE. Let me enter in here for a moment, because one of the very fundamental points we have continually made is that, in our entire strategy of deterrence, we are overlooking what Dr. Epstein has touched on, but not elaborated on—the need to be able to sustain our forces if we are to have a credible deterrence. Now, this talk about the rapid deployment force—assuming that we are in a Southwest Asia deployment, the rapid deployment force is sufficient, I believe, as it is now planned, if it is all put together, to get us there.

The thing that is missing, and no one is really focusing on and dealing with, is the issue of sustainability of the force once in place. And we have continually told the administration that their entire defense spending priorities need to be examined very carefully, because if you ignore the need to be able to sustain yourself if you are going to engage in battle, and if the ability to sustain yourself does not exist, then you have spent an awful lot of money upfront to gain very little.

And our thesis is that sustainability does not exist; we are getting to be more and more dependent on reserve fleets and reserve vessels; they are disappearing at an alarming rate, and no one is worrying about it. And, as a consequence, our paper states, because the shipyard base is disappearing, and because we are highly dependent on the need to break out reserve fleets, even to engage in that deployment of the RDF, and absolutely to sustain it, and if the shipyards do not exist that allow you to do that rapidly—because he is absolutely correct, if you do not get there with your force quickly enough, there is no use trying to go—we probably will try to go, by the way, but it really is not going to succeed. Now, our thesis is that you cannot build a deterrence unless you examine all of its components, and sustainability is the leg and the length to the credibility of your forces to prevail on a conventional basis.

And I think Dr. Epstein and I completely agree on that point. I just do not think he has stressed the issue—he probably has not examined the issue of how vulnerable we are in being able to sustain a deployed force in Southwest Asia.

Thank you.

AREAS PRESENTING GREATEST RISK OF WAR

Senator CHILES. Thank you, sir.

The President has reminded us on a number of occasions that we do not live in a riskless world, and despite all we do to combat the risks of hunger and poverty and the risks to our environment, there are certain risks that we must tolerate. If we are trying to maintain a consensus on national defense, we need to lay out those risks and assign our funding priorities on the basis of what risk is the most profound.

Dr. Epstein, could you tell us which parts of the world have the greatest risk of war breaking out, and where we face lesser risk so that we may have some idea of the range of risks that we face, in your eyes?

Dr. EPSTEIN. Let me just preface my answer by saying that one of the things that determines the risk of war is how much money we already spend on things. There is a common fallacy: it is that because the risk of war in Europe is low, we can afford to stop spending on European forces. One of the reasons the risk of war is low is precisely because we spend on European forces.

Senator CHILES. Right.

Dr. EPSTEIN. If I had to pick, I would say that the most serious possibilities present themselves in the area of the Persian Gulf, so that would be No. 1.

Beyond that, I think there is a possibility of war in Central America. I am not sure it is superpower war; I am not sure it is large-scale conventional conflict; but it is conflict in which American lives might be put at stake. That is not to say that such contingencies should account for a large part of our spending, or that the risk that war occurs should be equated to—

Senator CHILES. You are saying that there is more instability in those two areas now.

Dr. EPSTEIN. Right.

Senator CHILES. Do you believe that the risk of nuclear war is greater than the risk that we might have to fight a conventional conflict?

Dr. EPSTEIN. No.

STRATEGIC NUCLEAR FORCE VERSUS CONVENTIONAL FORCE SPENDING

Senator CHILES. Then let me ask you—how do you think we are weighing the balance of what we are doing for conventional weapons as opposed to our nuclear arsenal in regards to the balancing of this risk?

Dr. EPSTEIN. I think the expenditures are out of proportion. We should be spending proportionately less on strategic nuclear forces and more on conventional forces, but the spending on conventional forces should be much more balanced than it now is.

As I pointed out, I believe we are spending way too much on carrier-driven naval forces and should be spending proportionately more on ground forces and air forces, although I think modernization in each of those areas can be more balanced than is provided for in the Reagan budget.

NARROW CURRENT CONTINGENCIES AND COMMITMENTS TO WORKABLE STRATEGY

Senator CHILES. Dr. Epstein, I believe that the DOD has been developing a defense program that seeks to cover all contingencies in all parts of the world. At the same time, it is becoming clearer and clearer that we cannot afford to do that. Do you agree that the strategy that we cannot afford and cannot implement ceases to be a strategy, and when I see the trouble that this Nation faces in foreign policy, I believe that our lack of a strategy includes the lack of a clear set of policies or goals for which this Nation and when this Nation should use military force and when to use diplomacy. The absence of such policies has led us into Lebanon and the situation that we face there, I think, and may draw us further into Central America.

How would you suggest that we narrow the current set of contingencies and commitments down to some kind of a workable strategy that we can fund in a responsible way?

Dr. EPSTEIN. First, let me say that I agree entirely with your characterization of the Reagan strategy and its defense program. And you ask a very difficult question, that is the question of strategy, and not an easy question to answer.

I think, however, that the first order question is clear: what are the requirements for the basic national security commitments that we have and should maintain—NATO, the Persian Gulf, Korea, navy, sealift, airlift, and strategic? Let us do a serious job in deriving the forces required to meet these major commitments, first. That is step one.

For lesser contingencies, the Marines, traditionally, and quite successfully, have been a force with a lot of global flexibility—as has the Navy—that can deal with minor contingencies that come up elsewhere. I think that from a budgetary perspective, however, nobody has set any priorities. What are the main commitments, what are the minor commitments? Are they all the same? Are they all likely to occur at once? That has not been made clear, nor has it been made clear how, given a set of commitments, one actually goes about deriving the forces required to meet them. When you do not know what the commitments are, and you have no algorithm for deriving the forces. Of course the result is an undisciplined and inefficient defense buildup.

POTENTIAL MANPOWER SAVINGS

Senator CHILES. In your list of proposed cuts, you have primarily focused on the investment accounts, procurement, and research and development. Are there other potential savings, say, in the area of manpower, associated with these reductions?

Dr. EPSTEIN. Yes, certainly. As I noted in the written statement, I was invited to prepare the budget on quite short notice and con-

fined myself only to major line items, but if one is cutting procurement, then certainly, one should also cut the manpower that would go along with the procurement. If I am not going to build ships, then I do not need to increase manpower to man those ships.

Similarly, I think you can go through the O&M account, canceling those O&M increases that are truly connected to the procurement programs I have canceled. But I stress, and cannot stress too much, the importance of protecting the O&M accounts from unnecessary cuts because, as I say, the real leverage, historically, has been on skill, readiness, and other things. To continue, DOE projects could be cut that are connected with the nuclear programs I have recommended be curtailed.

I think there is also an issue, a tough issue, on the question of military pay. I am not an expert on military pay, but I have spoken to one or two, and I think the idea of the All-Volunteer Force was that we would run military manpower more or less like a market. If you cut the rate of increase of military pay, and it turns out your recruiting is not supplying adequate manpower for your forces, well, then, you can raise the pay again. But if we are trying to run this like a market, it might be a defensible notion to try and run it like a market—reduce the price, see what the elasticity really is. If all of a sudden, your manpower pool is drying up, you can raise the price. And again, I am not in a position to predict the outcome, but it does seem to me that that is an area that deserves serious consideration.

LOOK MORE TO ACTIVE RESERVE UNITS

Senator CHILES. In your opinion, would it be possible for the United States to go much more in the direction that Israel has gone, into a more active reserve that truly is trained and truly is capable of being mobilized into an efficient fighting force? I say this because right now, it is my opinion that some of our most capable and combat-ready units are our Air National Guard. We have exercises that go in in Florida yearly, at Tyndall Air Force Base, called the William Tell exercises in which are "shoot-offs" that take place. Year after year, they are won by National Guard units, from Canada and the United States, who seem to outperform the existing units.

The reason, they tell me, that this happens is that they are using pilots who have had a lot of combat training. Their crews are not rotated, as happens in the Air Force. They are people who have a great deal of pride in the unit, and they are very, very effective fighting forces. The worst problem, perhaps, is the equipment they use and whether or not it is kept up to date.

Of course, that is in some specialized units. Yet, we see that the Israelis maintain a very, very viable fighting force, considered to be one of the best in the world, on the basis of its size and its actual manpower they have.

Is that something we should be looking at?

Dr. EPSTEIN. Yes, I think so. I think your characterization of the Air National Guard and Reserve is accurate. In fact, in the written statement, I do suggest as another possibility the upgrading of the

National Guard and Reserve, along the same sorts of lines and for similar reasons.

B-1 BOMBER VERSUS STEALTH BOMBER

Senator CHILES. Just 3 years ago, when this administration asked the Congress to revisit its decision not to purchase the B-1 bomber, a number of my colleagues, led by the late Senator Henry Jackson, warned us that the purchase of the B-1 would ultimately lead to the deferral of the advanced technology bomber, or Stealth. New reports from the Pentagon indicate that the Air Force is now planning to extend the purchase of the B-1 beyond the 100 aircraft originally planned to produce. Some estimates cite a figure of purchase as high as 300.

Dr. EPSTEIN. Isn't life strange?

Senator CHILES. In your opinion, what effect might this have on the development of Stealth, and more importantly, are we missing an opportunity to significantly improve our nuclear deterrent?

Dr. EPSTEIN. I think we are missing an opportunity, and I think the B-1 should be canceled in favor of Stealth. The risks that the late Senator Jackson mentioned are quite real, and can only grow as the program is expanded, as the Air Force apparently intends.

I think it should be stopped right now, and we should move expeditiously to the introduction of the advanced technology bomber, which clearly offers more deterrent value in the long haul.

Senator CHILES. I thank you, and Mr. Rice. We thank you for your appearance here, too. So we will recess our hearings now at the call of the chair.

Thank you both for appearing.

[Whereupon, at 10:58 a.m., the committee was adjourned.]

STATEMENT
of
W.Y. Smith, Gen, USAF (Ret.)
Fellow, Woodrow Wilson International Center For Scholars
before the
Senate Budget Committee
23 February 1984

I am pleased to be here this morning to comment on the impacts of major cuts in the defense budget. To provide for an adequate defense at minimum cost is an objective we all share, but a most elusive one. The adverse impacts on our defense posture of major budget reductions made on a program-by-program basis without any underlying unifying concept are well documented but bear repeating.

- Inevitably, the unglamorous items get slashed--funds for operating and maintaining equipment and facilities; training; quality of life items to give our service people a decent standard of working and living; funds to sustain our forces in combat should the necessity arise--in other words items that make major, crucial contributions to the readiness of our military forces.

-Major procurement programs are frequently stretched out. This raises the cost per item of the equipment, most often substantially beyond the originally estimated cost. As a consequence everyone connected with the particular procurement program--the Military Department, the Office of the Secretary of Defense, the Congress--are roundly criticized for mismanagement and inefficiency.

-Defense expenditures become hostage to special interests who successfully push their pet programs at the expense of the broad strategic purposes of the U.S.

-On a larger scale, major reductions in defense programs reflect indecision, inconstancy, disagreement, and lack of a sense of purpose

within the U.S. Government. Allies begin to question our leadership; actual or potential adversaries find ways to exploit our apparent drift in policy.

In short, major budget reductions after a basic course has been set:

-Blur our strategic purposes in the eyes of allies, friends, and potential enemies.

-Unnecessarily raise the costs of defense at a time when it is imperative that we get the most for each dollar spent.

-Decrease the ability of our armed forces to do their job.

It is my view that a large part of the problems I have described come from the fact that too much time is spent--both in the executive branch and in the Congress--on specific military programs and projects, and not enough time is spent on identifying, clarifying, and prioritizing the basic national security purposes and policies this nation chooses to pursue. It is not foreordained that this should be the case; the basic framework exists for a much more constructive approach to these matters. Let me explain briefly why I think we can do better.

Currently, the budget process in essence works as follows. The President's defense budget basically flow from the Defense Guidance document. This document is reviewed and updated each year, with active and comprehensive participation by all major elements of DOD, to include, most importantly, the unified and specified field commanders. Once the Secretary has heard all the views on what the Defense policies and priorities

should be in the eyes of the various major elements of the Department, he makes his decisions and issues the Defense Guidance document. This document sets forth the basic policy direction and priorities the Department is to follow, and a broad outline of the strategy designed to implement the policies. Policies generally are set in a long term framework, and provided with bench marks toward their achievement. For example, the long term objectives in terms of the sustainability of our forces cannot be immediately achieved; therefore intermediate objectives are stipulated.

The Joint Chiefs of Staff review the Defense Guidance in terms of the military forces they believe necessary to carry out the approved strategy at an acceptable level of risk. This assessment is not financially constrained except in the most general terms; the resulting JCS document thus helps to underscore the scope and magnitude of the military endeavors directed in the Defense Guidance.

In the perfect world, taking the Joint Chiefs' assessment of the forces required, the Secretary of Defense would evaluate their recommendations, consult his other advisors, make his decisions, and direct the Military Departments to procure the required forces or, alternatively, decide it is not possible within the federal revenue anticipated, to provide the military forces the Joint Chiefs consider necessary and either modify the policies or knowingly assume larger risks. After making those decisions, the budget would be developed and forwarded to the President for his review and forwarding to the Congress. In practice, the situation is different.

At the same time the Joint Chiefs are making their assessment, the Military Departments are developing their budgets within general financial target figures given them by the Secretary of Defense. These Service budgets are supposed to be developed in conformity with the priorities stipulated in the Defense Guidance. Once completed by the Services, the Joint Chiefs evaluate these Service proposals in terms of the priorities they have determined, and provide their views to the Secretary, who consults with his advisors DOD-wide and then makes his decisions on the budget he will forward for Presidential approval.

It is acknowledged that the current system in the executive branch is far from perfect. First, the Joint Chiefs' initial assessment of the military forces required is frequently criticized as not being very helpful because it is not financially constrained and because it also is thought to involve trade-offs between the Services so that all Services get support for their major programs, irrespective of their strategic relevance. That the JCS discussions on these matters are most often adversarial, with many disagreements surfaced and contrasting viewpoints vigorously pursued is not seen in the results by those who believe only financially constrained assessments are of real value.

Even when the Joint Chiefs have occasion to consider the balancing of military priorities with financial constraints in their review of the Service budget submissions, the result is not seen by many as particularly helpful. It is alleged by these critics that the JCS review too often is a rubber stamp of military projects Service oriented, often not fully in accord with the priorities set forth in the Secretary's

strategic guidance. In fairness, in recent years, with greater participation of and concern for the needs of the field commanders, the priorities in the Defense Guidance have been better served.

Although the budget process in DOD is far from ideal, it does involve a major and useful dialogue between the OSD, the Services, and the Joint Chiefs of Staff-- a dialogue characterized by disagreements and strong advocacy, but one that also helps clarify what the participants believe are the most important contributors to the defense objectives of the U.S.--though they may not always be in complete harmony with those determined by the Office of the Secretary of Defense. The OMB is involved early on in the formulation of the DOD budget, so that it may weigh in as it deems appropriate. Other elements of the executive branch also participate. Once the final decisions are made at the Presidential level, the budget is then forwarded to Congress.

When that budget reaches the Congress, many of the debates held in the executive branch begin anew, with some new players and well as some who participated earlier. Of that process you members know far more than I. But what I do know is that after all the review and deliberations of both the executive and legislative branches of the government, the result to date has been what senior military people have labelled a "strategy-force mismatch," a disparity between the tasks the government directs our military forces to perform and the means provided to carry out those tasks. That mismatch is rendered even larger when major piecemeal budget cuts are made, when individual programs are reduced without adequate focus on what the consequences might be for the overall national policies and strategy.

As noted earlier, I strongly believe more time spent on clarifying, agreeing on, and prioritizing overall objectives, and more time spent concentrating on the strategies the government intends to pursue in moving the nation toward those objectives--in other words more time spent in the executive branch on developing the soundest Defense Guidance document, and more time spent in the Congress questioning that guidance when the Congress needs clarification or disagrees with it--would pay large dividends. More emphasis on the policy and strategy aspects of the budget process should render it easier to:

- make decisions on how much of the federal revenue should be allocated to defense;
- find the proper relationship between our defense purposes and policies, and the resources we are willing to devote to them;
- help eliminate the "strategy-force mismatch" that undermines both the effectiveness and the credibility of our defense posture.

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Soviet Vulnerabilities in Iran and the RDF Deterrent

Joshua M. Epstein

It is difficult to imagine a region at once so vital economically and so volatile politically as the Persian Gulf today. To its economic importance, the Arab oil embargo of 1973 was, for many, the first rude awakening. Since then, a stormy sequence of events has underlined its political instability. The Iranian revolution, the fall of the Shah, and the bitter ordeal of the hostages were, for many Americans, a shocking demonstration of that fact; the seizure of the Great Mosque at Mecca and the Iraq-Iran War, part of its grim and continuing confirmation.

Concurrent with these stark realizations, the West saw Soviet foreign policy enter a particularly adventurist phase, one in which regional instabilities—in Angola, in Ethiopia, and in South Yemen—were made targets of military opportunity. The possibility that a crumbling order in the Gulf would present the Soviets with even more attractive opportunities was lost on a very few.

And when the Soviets invaded Afghanistan, the West's worst fears suddenly seemed ominously at hand. Jolted by the alarming convergence of events, former President Carter threw down the gauntlet, warning in his 1980 State of the Union Address that "an attempt by any outside force to gain control of the Persian Gulf region—will be repelled by any means necessary, including military force."¹

Today, few would deny the claim of former CIA Director, Admiral Stansfield Turner that "... the most demanding need for military force in the region would be to oppose a direct thrust by the Soviets into Iran."² Indeed, this contingency, under the Carter Doctrine has served as a principal basis for planning of the Rapid Deployment Joint Task Force (RDF).

While the author bears sole responsibility for all views expressed here, he is grateful to William W. Kaufmann, Barry Posen, Steven Miller, and Ted Greenwood for their suggestions.

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1. U.S., Congress, Senate, Committee on Foreign Relations, "U.S. Security Interests and Policies in Southwest Asia," Hearings Before the Subcommittee on Near Eastern and South Asian Affairs, Ninety-Sixth Congress, second session, February-March 1980, p. 350.

2. Admiral Stansfield Turner (USN-Ret.), "Toward a New Defense Strategy," *New York Times Magazine*, May 10, 1981, p. 16.

Given the exceedingly grave consequences that would attend its successful execution, and the uncertainty surrounding Soviet intentions in the region, it is a contingency which no responsible analyst can ignore. And, of the numerous Persian Gulf contingencies of interest, a Soviet drive for the oil of Khuzestan is the threat to be examined here.

The prevailing view of American deterrent capabilities is frighteningly pessimistic. In peacetime, there are twenty-four Soviet divisions in the region, while the RDF's ground complement is assumed to number around four divisions.³ The Soviets enjoy proximity. They share a border with Iran while the bulk of the U.S. force is thousands of miles away. It is widely assumed in addition that simultaneous contingencies pose far more serious problems for the United States than they do for the Soviets.

As a consequence, there is a general consensus that without using nuclear weapons, the United States would stand little chance of handling an all-out invasion of Iran, and that in no event can there be a feasible defense without a dramatic expansion of American basing in the region.

Columnist Jack Anderson reports Government testimony to the effect that "the Rapid Deployment Force would be no more than a 'trip wire' against the Soviets. The contingency plan calls for a nuclear strike to stop the Soviets from annihilating the force."⁴ Defense Secretary Weinberger himself has warned that "the U.S., at present, is incapable of stopping an assault on Western oil supplies,"⁵ while prominent analysts have gone so far as to say that Iran "may be inherently indefensible."⁶

The military situation, however, has not received the close examination that it deserves. In divisions, the Soviets outweigh the RDF, and the larger force is the closer to Iran; those are undeniable facts. But the conclusions drawn from them are unwarranted.

If planned and postured according to the strategy proposed in this essay, the RDF can present an imposing deterrent to Soviet aggression. Further-

3. James Wooten, *Rapid Deployment Forces, Issue Brief Number IB80027* (Washington, D.C.: The Library of Congress Congressional Research Service, 1980), p. 4 and Sir John Hackett, "Protecting Oil Supplies: The Military Requirements," Paper presented to the International Institute For Strategic Studies, Twenty-Second Annual Conference, Stresa, Italy, September 1980, pp. 9-10.

4. Jack Anderson, "Frightening Facts on the Persian Gulf," *The Washington Post*, February 3, 1981, p. 18.

5. Robert S. Dudley, "The Defense Gap that Worries the President," *U.S. News and World Report*, February 16, 1981.

6. Jeffrey Record, "Disneyland Planning for Persian Gulf Oil Defense," *The Washington Star*, Friday, March 20, 1981, p. 17.

more, under such a strategy, tactical nuclear employment would be not only unnecessary, but ill-advised. Contrary to the prevailing view, moreover, the constraint of simultaneous contingencies weighs at least as heavily upon the Soviets as it does on the United States.

The essential features of that strategy are the abandonment of forward defense and the exploitation of warning time. But first, two issues must be addressed: the Soviet overland threat to Iran and the prospects for Soviet airlifted assaults. Each must be appreciated if Soviet tactics combining them are to be assessed.

The Soviet Overland Threat

As a consequence of the terrain (see map), this may be divided into three successive phases:

Phase I: The advance through northern Iran, over the mountains south to the Tehran line.

One might postulate the seizure of Qazvin and/or Tehran as Phase I goals. These might then be seen as the main bases of operation for

Phase II: The advance south through central Iran for a build-up at Dezful (or some other appropriate area at the southern base of the Zagros Mountains).

Phase III: The final thrust south to drive the RDF out of Khuzestan, securing Soviet control of Iran's principal oil and shipping facilities.

This plan closely resembles that set forth in the *Soviet Command Study of Iran* (1941).⁷ There, the Soviet General Staff wrote,

After the capture of Tehran and Qazvin, an advance in a straight line on to Hamadan and on to the Persian Gulf along the Southern leg of the Trans-Iranian railroad will be possible. Here is where the entire supply of weapons and munitions for Iran [read the RDF] will probably be concentrated. This line leads most directly to the center of Iran's oil industry.⁸

The objective, given this not entirely hypothetical plan, is to delay and wear down the Soviets' southern advance in such a way that an adequate coun-

7. *Soviet Command Study of Iran* (Moscow 1941): *Draft Translation and Brief Analysis*, Gerold Guensberg (trans.) (Arlington, Virginia: SRI International, January 1980).

8. *Soviet Command Study*, p. 160.



terpose can be inserted for the Battle of Khuzestan, as it were. Accordingly, the RDF strategy proposed here falls into three phases corresponding to those of the threat itself.

Phase I: Delay the advance into northern Iran while constructing a defense perimeter in Khuzestan.

Phase II: Delay and attrit the advance over the Zagros Mountains while building up for the ground war in Khuzestan.

Phase III: Battle of Khuzestan. (This would be a combined arms conflict including ground, air, and naval forces.)

The goal of this strategy is to deter aggression by the credible threat that its object—the oil—will be denied. Whether or not the RDF is adequate to that deterrent mission is the basic question to be addressed here.

Let us examine each of these phases in turn. It will become evident that the defensive plan exploits many of the vulnerabilities stressed in the Soviets' own *Command Study*.

PHASE I: DELAYING ACTION IN THE NORTH

There are three axes from the Soviet Union into Iran by land: from the Caspian Sea directly, and across the Soviet borders to the East and West of the Caspian. All three axes suffer a number of common problems. First, there is a very limited transportation system along each axis: there are roughly a dozen surface arteries from the Soviet Union to Tehran.⁹ Moreover, each (rail or road) must pass over formidable mountain ranges, notably the Qareh Dagħ in the northwest, the Elburz south of the Caspian, and the Golui Dagħ in the northeast. Third, each artery is punctuated by so-called "choke points." These are points at which a) destruction or blockage of the artery is feasible; b) bypassing the resultant obstacle is not feasible; and where c) clearing the blockage or restoring the route is time-consuming. The Soviets were, and doubtless are, very well aware of the vulnerability this represents, and especially, as the *Command Study* emphasized, of each route's vulnerability to air interdiction. Consider their commentary on the road (of which there remains essentially one) from Ashkhabad, in the northeast, to Mashhad. In reference to the Dash Arasy gorge, through which that road must pass, the Soviets wrote,

At km-25 the gorge narrows at some places down to 3 to 4 meters. The walls of rock on both sides reach heights of 200 to 300 m. The gorge can be easily destroyed which would seriously impede traffic.

9. This, and all subsequent statements concerning the number, length, or condition of surface arteries in the various sectors of Iran are derived primarily from *Map of Iran*, Central Intelligence Agency, 1977 and *Road Map of Iran*, Sahab Geographic and Drafting Institute (Tehran, Iran, 1977). A careful attempt has been made to compare the Soviets' 1941 discussion to the current transportation system. The match remains very close in the sectors of interest. While certain arteries have doubtless been upgraded for commercial use, this need not entail any reduction in vulnerability to military attack. Lightweight construction materials, for example, may be efficient from the point of view of economic growth while representing no enhancement in hardness or reduction in susceptibility to structural attacks. Moreover, even where arteries have been upgraded in the latter respect since 1941, so have air-to-ground munitions grown in effectiveness. In the view of experts interviewed by the author, the net effect of these developments has not been to reduce the vulnerability of the Iranian transportation system significantly. Indeed, some feel that it is more vulnerable (to modern ordnance) than it was in 1941.

In general, the Soviets stressed that

The road—along its entire stretch—is easily attackable from the air. Mountain sides and the narrow width of the plain (15–20 km) provide cover and allow divebomber attacks with ease.¹⁰

In each of the successive mountain chains of the northern Khorassan, the Soviets enumerated “narrow gorges which can be easily blocked.”¹¹ Roads are very scarce and vulnerable, as they were in 1941. For these reasons, it is difficult not to concur in the Soviets’ own view that the mountain range of the northeast

constitutes a mighty frontier protection which makes very difficult an invasion from the north into the Khorassan interior.¹²

Looking westward to the Caspian approaches, the Soviets wrote of the Elburz mountains that

they simplify considerably the defense of the important central areas of Iran against an enemy who has landed along the southern shores of the Caspian Sea.¹³

Why? Because, of the roughly five roads over the Elburz to Tehran or Qazvin, all must cross bridges over precipitous faults thousands of meters in the mountains, or must pass through narrow gorges.¹⁴ So concerned were the Soviets that the few available arteries would be closed off, that they took an inventory of all draught animals (horses, donkeys, mules, and camels) in Iran, anticipating that air interdiction might force them to advance over the pack animal tracks that lace this craggy terrain.¹⁵

There is one railroad from the Caspian to Tehran, the trans-Iranian railroad. It is the only railroad from Tehran south to Dezful. It traverses the above terrain first in the Elburz and again south in the Zagros Mountains. Of the passage over the Elburz, the Soviets wrote that the line “can be easily

10. *Soviet Command Study*, pp. 218–219, and 220.

11. *Ibid.*

12. *Ibid.*, pp. 20–21.

13. *Ibid.*, p. 164.

14. From the coastal city of Now Shahr, south of the main port of Pahlavi, for example, the meticulous Soviet planners noted that “the more deeply the path penetrates the gorge (up to km. 20) the more difficult becomes the traffic. A dynamiting of the rocks or the destruction of the road or the bridges would greatly slow down the movement of troops. . . . Bypassing the road in the event of destruction is nearly impossible. The traffic can be resumed only after the road has been repaired.” *Ibid.*, p. 176.

15. *Ibid.*, p. 100.

attacked from the air."¹⁶ Even in the lowlands near Tehran, they cautioned that "the entire section is observable from the air and it can be easily attacked."¹⁷

Finally, in the northwest, the Iranian Azerbaidjan, the same vulnerabilities prevail. There is a single road from Jolfa (just across the Soviet border in Iran) to the first main city, Tabriz. Of that crucial artery, the detailed *Command Study* records:

At km 22 from Dshulfa [Jolfa] begins the Daradis gorge which is 7 km long. The advance of troops through this small and narrow pass can be most difficult. The movement of troops can be made even more difficult if the enemy employs roadblocks or attacks from the air.¹⁸

Again, bypass is virtually infeasible. The shoulders of the gorge are walls of boulder. Detonations creating rockslides would severely hamper troop movement, and could be cleared only with extensive military engineering efforts.

NUCLEAR VS. CONVENTIONAL WEAPONS. The first phase of the defensive plan is to delay the advance of Soviet units by choking off this transportation system. This mission could be accomplished with nuclear weapons or with conventional forces.

As to the feasibility of nuclear interdiction, a study conducted for the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation (PA&E) concluded that "ADM [Atomic Demolition Munitions] alone could quickly seal all avenues of approach into Iran."¹⁹

It is far from clear, however, that nuclear employment is necessary, despite claims to the contrary.²⁰ Those claims generally fail to draw a critical distinction. They begin by noting that the RDF is, among other things, designed to *protect* the West's "oil lifeline"; this is located in *southern* Iran. In the same breath, however, recourse to nuclear weapons is deemed necessary, for lack

16. *Ibid.*, p. 201.

17. *Ibid.*

18. *Ibid.*, p. 127.

19. Captain Henry Leonard and Mr. Jeffrey Scott, *Methodology For Estimating Movement Rates of Ground Forces in Mountainous Terrain With and Without Defensive Obstacles: First Draft* (Washington: Study for the Office of Assistant Secretary of Defense, Program Analysis and Evaluation, October 12, 1979), p. 3.8.

20. While at *The New York Times*, now Director of the State Department's Bureau of Politico-Military Affairs Richard Burt related that:

"A Defense Department report on the military situation in the Persian Gulf region has concluded that American forces could not stop a Soviet thrust into northern Iran and that the

of other means, to blunt a Soviet violation of northern Iran. The prevailing assumption that the use of nuclear weapons is necessary therefore rests critically upon the premise that a forward defense of the northern Iranian border is required to prevent Soviet control of Khuzestan's oil riches. But why should it be? The oil lies roughly a thousand kilometers and two formidable mountain chains south of the "inviolable" border.

If, by a series of conventional delaying operations, enough time can be bought to permit the emplacement of an adequate American defense force there, Soviet control of Khuzestan could be denied. In the final analysis, the RDF's problem is time. To be sure, nuclear weapons would buy more time, and more quickly, for a Western build-up in the south than would conventional munitions. But if enough time can be bought conventionally, that, for a host of reasons, is surely the approach to be preferred.²¹ And it is a feasible approach.

United States should therefore consider using 'tactical' nuclear weapons in any conflict there." Richard Burt, "Study Says a Soviet Move in Iran Might Require U.S. Atom Arms," *The New York Times*, February 2, 1980, p. 1.

Columnist Jack Anderson reported in *The Washington Post* that

"President Carter established the far-flung, multi-service Rapid Deployment Force to protect our oil lifeline. Yet top military hands warn that it . . . could never be a match for the Soviet juggernaut across the Iranian border." Jack Anderson, "Frightening Facts on the Persian Gulf."

21. In addition to being adequate to the deterrent goal, denial, conventional operations would avoid those externalities which could attend nuclear employment. Assume for the moment that in the face of American nuclear use the Soviets did not respond in kind, but for example, simply "threw in the towel" and withdrew their surviving troops. The entire world would be watching. The event would have provided it a graphic example of the military utility of nuclear weapons and could thus be a positive stimulant to nuclear proliferation. The United States would be hard pressed, having successfully relied upon them, to argue their superfluity to, for example, the Saudis, Pakistanis, South Koreans, even the Iranians themselves.

In the latter regard, it might be noted that collateral nuclear damage to Iran and the untoward consequences for its northern populations could eventuate in such bitter and enduring enmity toward the United States and its Allies as to produce economic consequences indistinguishable in their gravity from those the employment was intended to avert.

As for Europe, such a demonstration of U.S. willingness to use nuclear weapons in a forward defense could reinforce whatever preemptive inclinations the Soviets may harbor toward NATO's vulnerable land-based theater nuclear weapons; "the Americans used them first to buy mobilization time in Iran and they'd use them first to buy mobilization time in central Europe." The implications of this altogether natural train of thought for "Euro-strategic crisis stability" should be obvious.

All of these perfectly plausible and very unfortunate consequences—for Western energy, for proliferation, and for European security—could attend the "best case" in which the Soviets fail to respond in kind. And there is always the grave risk of Soviet escalation itself, a risk which is certainly associated with any use of nuclear weapons. If, in closing roads, ground bursts were

The first step is to delay the Soviets' advance through northern Iran.

To do this, the major units with forces available to the RDF are impressive, and include the following:

Army

- 82d Airborne Division
- 101st Airborne Division (Air Assault)
- 24th Infantry Division (Mechanized)
- 194th Armored Brigade
- 6th Combat Brigade (Air Cavalry)
- Various Ranger and Special Forces units

Air Force

- 27th Tactical Fighter Wing (F-111)
- 49th Tactical Fighter Wing (F-15)
- 347th Tactical Fighter Wing (F-4)
- 354th Tactical Fighter Wing (A-10)
- 366th Tactical Fighter Wing (F-111)
- 552nd Airborne Warning and Control Wing (E-3A)
- 150th Tactical Fighter Group, Air National Guard (A-7)

the *modus operandi*, then, depending upon the prevailing winds, the Soviet Union (which "enjoys" proximity) could be subjected to substantial fallout.

While seeking to avoid unnecessary risks of escalation by one's adversary, it is equally important to avoid imposing escalatory pressures upon oneself. Casualties are, of course, to be minimized on humane grounds. But they should be minimized for this less immediate reason as well. As one's casualties mount, so may the pressure to prosecute the war to an extent, or in a manner, not called for by its original, limited objectives. That is, if the human "sunk costs" quickly come to outstrip the original objectives, since the former cannot be reclaimed, the latter may be raised to ensure that death was not in vain. Ill-considered expansions of war goals, and an ever-increasing commitment of troops may follow.

While the risk of Soviet escalation is associated with a nuclear defense, these considerations would counsel against airborne and in favor of air power as the conventional instrument in Phase I; first, because transport of airborne (dropped) troops into the northern mountains of Iran would be quite vulnerable to Soviet-based fighters. Even assuming that a sufficiently large contingent of airborne troops could be securely delivered, are they to be recovered or left to "fend for themselves"? To pick them up would require the use of vulnerable helicopters or fixed-wing aircraft, while to resupply them for a sustained defense would be equally demanding. To lose them and/or the forces engaged in either their recovery or resupply, could be escalatory.

The classic method of dealing with the vulnerability of airdropped forces would, of course, be to press an advance north, expanding one's perimeter until the airborne forces were within it. Aside from being totally inconsistent with all of America's expressed aims in Iran, this tactic—essentially an occupation—would subject the U.S. to all those vulnerabilities upon whose exploitation its strategy should be based.

For all of these reasons, then, conventional air forces seem the most intelligent instruments in the first delay phase.

188th Tactical Fighter Group, Air National Guard (A-7)
 Reconnaissance squadrons
 Tactical airlift squadrons
 Conventional Strategic Projection Force
 Various other units

Navy

3 Aircraft carrier battle groups
 1 Surface action group
 5 Squadrons of antisubmarine warfare patrol aircraft
 6 Amphibious ships
 7 Near-term prepositioning ships (NTPS)

Marine Corps

Marine amphibious force (division + wing)
 7th Marine Amphibious Brigade (NTPS MAB)²²

While the regional basing currently available is inadequate to accommodate so large an air arm, that does not warrant fatalism regarding the first delay phase. Its limited goal, recall, is to bound the Soviets' rate of advance sufficiently to ensure enough time to mount an adequate combined arms defense in Khuzestan. As will become evident, if the interdiction campaign were to ensure a month in transit from the Soviets' bases to the point at which the second delay phase is conducted (in the southern Zagros), that should be adequate (as always, on the assumption that warning time is exploited).

The on-road distances involved are all on the order of 1000 kilometers at least. To ask that the RDF's air operation yield a month in transit is therefore merely to require that it limit the Soviets' overall (repair plus movement) rate to no more than roughly 33 $\frac{1}{3}$ km/day. But that, history records, would be a remarkable pace. It would exceed that achieved by Hitler's armies in their blitz of Flanders in 1940 (31 km/day) and in Operation Barbarossa the following year (29 km/day). The Normandy Breakout of 1944 saw a rate of 28 km/day, while 13 km/day was logged by the North Koreans in their offensive of 1950. The Israeli's victories on the West Bank and the Golan in 1967 were achieved under advance rates of 27 and 18 km/day respectively.²³ Notwithstanding the myriad differences between each of the above and the Soviet

22. *Fact Sheet*, Public Affairs Office, HQ Rapid Deployment Joint Task Force, April 1981, pp. 2-3.

23. Colonel T. N. Dupuy, *Numbers, Predictions and War*, (Indianapolis: The Bobbs-Merrill Company, Inc., 1979), p. 16.

advance as posited here, 33 $\frac{1}{3}$ km/day is a very spirited clip. And in none of these historical cases was the cited rate sustained over so great a distance as that facing a Soviet "drive for oil."

In short, the Soviets would be operating in truly forbidding terrain, over northern Iran's limited and vulnerable transportation system—a system so constricted that at its narrowest points, the mere disabling of lead elements would bring whole columns to a standstill; it is a network dotted with severe choke points. Under such conditions, to hold the Soviets down to one of the highest advance rates in history must be seen as a modest goal. And although more ambitious goals may fall within its grasp should the RDF's regional basing expand, current resources should be capable of holding a Soviet advance to that rate or lower. Indeed, an array of options present themselves.

The less stringent is one's demand for time urgency, the less demanding the interdiction operation becomes. And there is no compelling military reason, if the United States exploits warning time, either to strike every lucrative choke point in a single day or to conduct the operation solely with tactical air. In one of the most innovative moves of recent years, twenty-eight B-52Hs (in North Dakota) "have been organized into a quick-response outfit called the Strategic Projection Force, or *Spif*."²⁴ Designed specifically for conventional bombing operations in the Gulf region, *Spif*'s "war plans call for the bombers to strike at night at low level." As of this writing, *Spif* planners report that "training for Persian Gulf missions has reached the point that a full-dress exercise will be conducted soon."

While feasible from the continental United States, such conventional B-52 operations could also be staged from bases in Guam, Australia, Clark Field in the Philippines and elsewhere. Diego Garcia will shortly be capable of accommodating the B-52s. It can be hoped, as SAC Commander General Ellis notes, that

sending B-52s to the trouble spot in the first hours of a crisis might be enough to freeze the Soviet military. Bombs might not have to be dropped at all, as long as the will and ability to do so were demonstrated . . .²⁵

If deterrence fails, however, the RDF could initially create the northernmost tier of choke points, working south only as reconnaissance dictates, relying primarily on the bombers, and phasing in air from the Khuzestan perimeter

24. George C. Wilson, "'Anytime Anywhere': A New Conventional Role for B-52 Bombers," *The Washington Post*, March 31, 1981, p. 6.

25. *Ibid.*

as it becomes available. This "tiered interdiction" could effectively deny Soviet engineering units any opportunity to restore routes before the main columns arrive. Aircraft from the two carriers now on station in the region could, from the Gulf of Oman, be used to provide escort for the bombers or, if they were aurally refuelled, to conduct a portion of the interdiction operation. The carriers' classical mission, however, would be to provide tactical air cover (power projection) for the Marine beachhead in Khuzestan, cover which could be augmented by offshore support (if necessary) from smaller surface combatants inside the Persian Gulf. As the Marine perimeter expands and establishes its air defense, the carriers can be withdrawn while, from within the perimeter, Air Force and/or Marine aircraft take over the continuing air interdiction campaign from the bombers. The latter could then be withheld as an intra-war deterrent or could strike targets in central Iran, Afghanistan, or elsewhere. With the establishment of a perimeter air defense, carrier air, arrayed from the Gulf of Oman to the Arabian Sea, could be flexibly employed in a variety of ways, including fleet defense, power projection, and Sea Line of Communication (SLOC) protection. With warning, the RDF's third carrier could supplement aerial refuelling and air defense of the two on-station carriers, used in any of the above capacities.

This particular scheme is not the only one possible. The range of tactical combinations and employment schedules is wide. It is one of many alternatives to carrier operations, however brief, inside the Persian Gulf. Although further regional basing—particularly Turkish, Omani, or Saudi—would simplify it, the RDF's northern interdiction campaign is feasible and, while limited in scope, it would form an effective spearhead to an imposing deterrent posture.

PHASE II: DELAYING ACTION IN THE ZAGROS

Phase II is conducted in the Zagros Mountains from within the southern perimeter by highly mobile (heliborne) special forces. The tactics are similar to those used by the Finns in the Soviet-Finnish Winter War, in which ambush and "hit and run" tactics figured prominently. Termed "motti" tactics, their employment by the vastly outnumbered defenders thoroughly frustrated the Soviets' continuing attempts to penetrate the waist of Finland.

The Soviets' overland passage through the Zagros would be as difficult as in the north; there are again very few arteries. In every case, choke points abound, and they may be selected to maximize defensive opportunity. Of the countless gorges through the parallel chains which are the Zagros, the

Soviets wrote, "... with the use of obstacles or roadblocks, these can be turned into excellent defensive positions."²⁶

The RDF would have two objectives in Phase II: delay and attrition. Both can be made quite severe with surprising economy. Regarding attrition, the above-mentioned study for PA&E concludes that,

The mission of light forces in the delay phase should be to inflict losses on the invader without becoming decisively engaged. . . . Airmobile infantry forces employed in small-unit (company or even platoon) ambushes can seriously harass heavier enemy forces for very short periods without risking severe losses or entrapment. . . . Our forces could choose the time and place of the ambush, and enjoy, briefly, the advantage of surprise.²⁷

Indeed,

gaming of a five-minute engagement between a U.S. light infantry company and the point of a Soviet mechanized column . . . indicates that the U.S. unit would incur minor losses while practically wiping out the opposing force.²⁸

Finally, and consistent with the Soviets' own observations:

The use of a small expedient obstacle such as a point minefield would make the engagement even more lopsided, as it would provide the ambush force with stationary targets from the onset of the fighting . . . Ideally, the ambush force would be positioned only a short time before the enemy column came into range. It would be withdrawn immediately after the ambush. Given adequate helicopter transportation and ammunition, a light infantry company could conduct three or four such ambushes per day for a period of time. . . . A battalion of 3 companies could impose practically constant attrition and harassment on enemy columns . . .²⁹

It is difficult to say precisely how severe the attrition exacted by these measures would be. There seems little doubt, however, that it could significantly reduce the force that the RDF would face in Khuzestan, and the same campaign affords the United States still more time to expand its force there.

In addition to the delay imposed by the Phase I air interdiction campaign, one can use the study's "planning guideline of two days' delay per engineer platoon day of effort"³⁰ to gauge the extent of further delay imposed upon

26. *Soviet Command Study*, p. 190.

27. Leonard and Scott, *Methodology For Estimating Movement Rates*, p. 4.1.

28. *Ibid.*

29. *Ibid.*, p. 4.3.

30. *Ibid.*, p. 4.5. This planning factor is given in connection with Zagros operations specifically.

Soviet troops in the Zagros. Bearing in mind that a platoon is one eighty-first ($1/81$) of a division,³¹ the economies available are quickly evident.

There are literally two roads over the Zagros directly onto Dezful. The trans-Iranian railroad is a third avenue, assuming it has survived the air campaign in the north. The two roads which descend on Dezful from Kermanshah bring the total to roughly five arteries. From the above planning factor, it follows that a force of six platoons could, with two weeks of effort, close each of those approaches for thirty-four days.³²

Time is the name of this game. And under reasonable assumptions, the Phase I air interdiction operation should have ensured thirty days of mobilization and deployment time for the battle of Khuzestan, while these Phase II *motti*-like tactics should raise the Soviets' time in transit (movement plus repair time) to Dezful by roughly another month. As far as the Soviet overland advance is concerned, then, sixty days does not seem overly optimistic as an estimate of the time the Soviets would require to emerge at the base of the Zagros. Is that all the time the RDF would have for mobilization and deployment for the final pitched battle in Khuzestan? It seems unlikely that it is. The RDF would have warning time as well. The question is, how much?

SOVIET READINESS, U.S. WARNING, AND DECISION TIME. The 1968 invasion of Czechoslovakia was preceded by a three-month build-up of which Western intelligence was aware. The invasion of Afghanistan was also preceded by three months of warning.³³ Should the Soviets invade Poland, that move will, in retrospect, have been preceded by at least three months of warning.

Of the roughly 24 divisions stationed in peacetime in the Southern Military Districts of the Soviet Union (North Caucasus, Transcaucasus, and Turkistan), none are accounted as Category I.³⁴ Indeed, over eighty percent are rated as Category III divisions.³⁵ To ready these forces for combat, the Soviets

31. A standard U.S. division structure is: 3 platoons/company; 3 companies/battalion; 3 battalions/brigade; 3 brigades/division.

32. Needless to say, the planning factor is a linear approximation of a more complicated relationship. However, even if it overestimates the effectiveness of such tactics by a significant margin, the effort involved in imposing the same delay would remain very modest. Some of the demolition responsibilities could also be assumed by tactical air.

33. See Jiri Valenta, "From Prague to Kabul: The Soviet Style of Invasion," *International Security*, Volume 5, Number 2 (Fall 1980).

34. *The Military Balance 1980-81* (London: The International Institute for Strategic Studies, 1980), p. 10-11. Soviet divisions have three degrees of combat readiness: Category I, between three-quarters and full strength, with complete equipment; Category II, between half and three-quarters strength, complete with fighting vehicles; Category III, about one-quarter strength, possibly complete with fighting vehicles (some obsolescent).

35. Henry Stanhope, "New Threat—or Old Fears?" in Derek Leebaert (ed.) *European Security: Prospects for the 1980s* (Lexington, MA: Lexington Books, 1979), p. 49.

would have to call up manpower and train or refresh much of it. Petroleum, oil, lubricants, spares, water, ammunition, and other supplies would have to be marshalled and loaded. The shipment of combat equipment into the area would be required while backlogged maintenance and, in some cases, final assembly of equipment would be performed. If the current mobilization for Poland is any indication, a great many trucks would be impressed from diverse quarters.

All of this activity takes time, and much of it would be visible to the West. Recent reports do indicate that, since the invasion of Afghanistan, the readiness of these forces has increased somewhat.³⁶ There is no indication, however, that Category I levels have been widely attained, while even those would credit the Soviets with as little as seventy-five percent of their full wartime manpower.

The standard category ranking of forces is, moreover, a static indicator. The "readiness" of forces depends on the missions facing them. One should not think of forces as "ready," but as "ready for" something; something specific.

In Czechoslovakia, resistance was essentially passive while in Afghanistan it, while tenacious, has lacked the sophisticated air force or the ground firepower that today's Soviet planner must anticipate in Iran. Thus, while granting some increase in "static readiness," if you will, to the Soviet units of interest, one must also assume that the Soviet planner recognizes the vast difference between the resistance of the Czechs and Afghans and that for which his forces must be "ready" in Iran. For all of these reasons, it is perfectly plausible that warning time would stay in the neighborhood of the usual three months. But let us be conservative and assume only one month of warning. The entire mobilization and deployment (M&D) time available to the main ground force of the RDF would thus appear to be 90 days.

Warning Time	1 month
Phase I Delay (air)	1 month
Phase II Delay (special forces)	1 month
Total M & D Time	3 months

It must be stressed that warning time, in this military sense, and decision time among political figures are radically different entities. A great deal can

36. William W. Kaufmann, "Defense Policy," in Joseph A. Pechman (ed.), *Setting National Priorities: Agenda for the 1980s* (Washington D.C.: The Brookings Institution, 1980), p. 305.

be done with warning time: to broadcast one's cognizance of developments, to enhance the credibility of one's deterrent commitments, as well as to ready one's forces.³⁷ The availability of warning time, however, does not ensure that it will be used. Among the most important peacetime goals for the United States is to ensure that it is used, through procedural agreements with U.S. intelligence services and forces, and through diplomatic understandings with countries in the region. Time bought with warning is cheaper than time bought with force. Indeed, if it is utilized in the communication of one's military readiness and political determination, warning time may, by deterrence, avoid the conflict. If war *should* come, however, the Soviets would have little basis for confidence.

PHASE III: THE BATTLE OF KHUZESTAN

There are three basic issues concerning the ground balance. First, how many divisions could the Soviets support south of the Zagros? Second, in the time available (total M & D time), what is a conservative estimate of the U.S. build-up in Khuzestan? And finally, what confidence could the Soviets have of defeating that force in battle?

As to the second question, a range of estimates has appeared regarding the size of the RDF that could be brought to bear in sixty days. There is a well-founded consensus, however, that in addition to a Marine contingent of three brigades, three divisions and their initial support increments could be deployed to Khuzestan in roughly that time.³⁸ Since ninety, rather than sixty days of mobilization and deployment time would likely be available to all but the very spearhead of the force, the four division figure may even be conservative. A force considerably larger than this might be brought to bear if equipment and stocks were pre-positioned at, for example, Australian facilities, Clark Field, and Subic Bay in addition to Diego Garcia, particularly if warning time were exploited in a pre-arranged commitment of allied commercial shipping to the RDF's sea line of communication. This valuable

37. For example, load cargo, fuel-up for the lift, pre-deploy certain materiel, increase reconnaissance densities, move further Marine units into position, marshal allied commercial shipping, stand down and perform backlogged maintenance, and increase NATO alerts.

38. See for example, Sir John Hackett, "Protecting Oil Supplies," p. 14, and U.S. *Airlift Forces: Enhancement Alternatives for NATO and Non-NATO Contingencies* (Washington: The Congressional Budget Office, April 1979), pp. 23, 55. Relevant force weights, airlift planning factors, and computational methods are provided in the study and in U.S. *Projection Forces: Requirements, Scenarios, and Options* (Washington D.C.: The Congressional Budget Office, April 1978).

contribution would be a clear signal of allied involvement without being a commitment of allied troops to combat.

SIMULTANEOUS CONTINGENCIES. It is true that, at present, the 4-division figure assumes use of the full fleet of 77 C-5As,³⁹ the only U.S. aircraft capable of lifting outsized cargo. This represents a compromise in the U.S. ability to reinforce other theaters simultaneously. Maturation of the RDF's near- and long-term maritime pre-positioning programs, however, will relieve the outsized constraint, while oversized and bulk cargo capacities will rise with the C-141 "stretch" and aerial refuelling programs. Procurement of SL-7 fast sealift ships would further loosen these logistical constraints. Eight alone would allow the movement of "a mechanized infantry division from the East Coast to the Persian Gulf in about three weeks."⁴⁰ Commitment of U.S., Japanese, and European commercial air and shipping to logistical support would add a further measure of confidence to the sustainability of combat operations.

Since a Soviet attack on Iran would raise the specter of nuclear war, the Strategic Air Command would probably rank high in the pecking order for tanker support. While this is not a crippling constraint, either through procurement of additional long-range tankers, or by other measures, it is one that must be addressed.

Finally, third parties, such as North Korea, could take a superpower conflict in Iran as the occasion to settle vendettas of their own. Were such contingencies to coincide with wars in Central Europe and Iran, current U.S. strategic mobility and *active duty* forces might be stretched far too thin for comfort. That problem, however, is not irremediable.⁴¹

The United States faces challenges in the area of simultaneity. But those facing the Soviets are no less severe. The only Soviet aircraft with an outsized capability is the Antonov-22, of which there are reported to be but 75.⁴² And, in reference to a statement by Defense Secretary Weinberger, the *New York*

39. Jeffrey Record, *The Rapid Deployment Force and U.S. Military Intervention in the Persian Gulf* (Cambridge, MA: Institute for Foreign Policy Analysis, 1981), p. 50.

40. RDJTF Fact Sheet, p. 7.

41. For a detailed discussion of U.S. corrective options, and their relative merits and costs, see William W. Kaufmann, "The Defense Budget," in Joseph Pechman (ed.), *Setting National Priorities, The 1982 Budget* (Washington D.C.: The Brookings Institution, 1981).

42. Robert P. Berman, *Soviet Airpower in Transition* (Washington D.C.: The Brookings Institution, 1978), p. 35. Berman notes that "about two-thirds of their fleet of seventy-five is in operation at any one time."

Times has reported that, "The airlift capacity of the Soviet Union was said to be unable to cope with two large operations at one time."⁴³

Thus, while the lift to Iran would initially tie up the U.S. C-5A fleet, any comparable lift on the Soviets' part would similarly strain their outsized airlift capacity. (The vulnerability of Soviet airlift is discussed below). Moreover, with China, NATO, the Poles and Afghanistan, Iran would be, not their third, but rather, the Soviets' *fifth* contingency—one which could severely hamper their capability elsewhere.

The force with which a four-division RDF would have to contend, over a thousand kilometers south of the Soviet border, depends upon other factors which have not been widely appreciated. While the peacetime deployment of twenty-four divisions in the southern Soviet Union has been publicized, the pertinent questions have not been raised. Over what duration of conflict could the Soviets *support* a field force of a given size? To provide a force with the consumables required to sustain combat at the distances facing the Soviets is a major logistical challenge, and one they have never faced before. Indeed, they have addressed far less challenging logistical problems with something less than virtuosity.

For example, in the invasion of Czechoslovakia, the Soviets met little resistance.

No bridges were destroyed, no road blocks erected, and no minefields were planted in the invaders' path. Under such conditions, there was no reason to expect anything other than a brilliant performance by the Soviet Army.

Yet,

Short of organic transport, the armored and mechanized divisions were left without basic supplies on the third day of occupation. Under actual combat conditions, they would have lacked many essential items after the first 24 hours.⁴⁴

Although the Soviets appear to have expanded their organic transport somewhat, logistics remains among the weakest links in the Soviet military machine.

At daily consumption rates (of ammunition, spare parts, petroleum, oil, and lubricants) consistent with a high offensive lethality (discussed below),

43. Richard Halloran, "U.S. Is Weighing Aid to China If Soviet Acts Against Poles," *The New York Times*, April 5, 1981, p. 6.

44. Leo Heiman, "Soviet Invasion Weaknesses," *Military Review*, August 1969, p. 39 and p. 43.

it is implausible that the Soviets could sustain a combat force of more than about seven divisions in Khuzestan without degrading their European, Far Eastern, or Afghanistan capabilities. Beyond that level, the requirement in logistics trucks alone grows at so disproportionate a rate that to sustain the full 24-division⁴⁵ "threat" could dictate a draw-down (from other theaters) on the order of 55 Category I divisions' worth of trucks.⁴⁶ This would exceed the supply available from the sum of Soviet forces deployed opposite China (46 divisions) and in Afghanistan (6 divisions), even if those forces were all Category I. And since they are not all Category I, a 24-division force in Khuzestan would, in fact, denude an even greater number of divisions.

The calculation underlying these assertions, moreover, is quite conservative. It assumes *no* attrition of Soviet trucks and that *none* suffer mechanical breakdown. It leaves out of account *all* limitations on road capacity, a factor which alone could limit the Soviet force to the same low level. In calculating the Soviets' combat tonnage requirement, such necessities as food and water were excluded, again to be conservative.

Giving the Soviets the benefit of some rather serious doubts, then, and assuming that a seven-division combat force could be supported for a Battle of Khuzestan, what confidence would that force have of defeating an RDF of four divisions?

LETHALITY, DEFENSIVE ADVANTAGE, AND THE GROUND BATTLE IN KHUZESTAN. Although the RDF would not be grossly outnumbered, history in fact records innumerable cases in which even the vastly outnumbered defender staves off aggression. The defense, for example, may enjoy the advantage of operation from prepared, or even fortified, positions while an attacker must come out into the open to advance, exposing himself to fire.

If he is not to increase his vulnerability further by halting, the attacker must locate the more concealed target and fire on it while in motion; but

45. The 24 divisions facing Iran are those of the Southern Soviet Military Districts (Northern Caucasus, Transcaucasus, and Turkestan). For conservatism's sake, let us add the six divisions of the Central Military Districts (Urals and Volga). From this theater total, subtract again six, the force now in Afghanistan. The remaining 24 divisions is then the theater pool with which we are concerned. All other forces are either deployed to the Sino-Soviet border, to Eastern Europe or to the latter's reinforcement in the Military Districts of the European USSR. Requirements beyond those organic to the theater pool of 24 divisions must therefore be seen as draw-downs from these other contingencies, and thus as representing sacrifices in the Soviets' capacity to undertake them simultaneously. *The Military Balance, 1980-1981*, pp. 10-11.

46. These calculations are presented in Joshua M. Epstein, *The Soviet Threat to Iran and the Deterrent Adequacy of U.S. Rapid Deployment Forces*, (Paper presented to the Oil and Security Roundtable, July 23-24, 1981, Harvard University).

motion generally reduces accuracy. In this case, moreover, the defender (the RDF) is agreed to retain a significant technological edge in the areas of target acquisition, battlefield reconnaissance, and its processing.

Where these defensive advantages apply, military experience has handed down the general planning factor that a defender should be able to hold the front essentially stable so long as the attacker enjoys no more than a 2 to 1 advantage in lethality.⁴⁷ More conservative planning factors (1.5 to 1) and less conservative ones (3 to 1) are available, as are more or less demanding tactics than holding the front stationary. But, even under the most conservative tactics and planning factors, an RDF of four divisions should be expected to fare rather well.

Such judgments, of course, are based on some measure of relative lethality, a difficult entity to gauge. By the crudest of indices, the division count, the 4-division RDF balances the Soviet 7-division threat, at the above-cited Army planning factor of 2 to 1. However, the more refined is one's measure of lethality, the more powerful grows the RDF in relation to the Soviets. For example, under the Army's WEI/WUV scoring, a U.S. armored division on the defensive is rated as being 50 percent stronger than a Soviet tank division on the offensive; a Soviet tank division, that is, represents 0.67 U.S. Armored Division Equivalents (ADEs).⁴⁸ At relative lethalties in this range, the 7-division Soviet force is the equivalent of 4.69 U.S. divisions of the same class; the lethality ratio falls thus to $4.69/4 = 1.17$, well within the more conservative planning factor of 1.5 to 1. But, the WEI/WUV scoring considers only the assets of the division and, in leaving support and non-divisional (corps) assets out of account, attributes disproportionate weight to the Soviet divi-

47. U.S. Army Field Manual FM 105-5, *Maneuver Control* (Department of the Army, 1967), p. 212.

48. In the WEI/WUV system, the U.S. armored division is assigned the value of 1.0. In relation to the U.S. armored division, the lethality of any other force may be gauged by a weighted aggregation of the strength of its component units. By a combination of test range data and military operational judgment, the components are assigned weapon effectiveness indices (WEIs). These are then added up to obtain the weighted unit values (WUVs), expressed in U.S. Armored Division Equivalents. The procedure differs from the older firepower scoring in "working down," as it were, from the U.S. armored division rather than "working up" to a firepower score in M-16 rifle equivalents. The WEI/WUV system also incorporates accuracy and other factors not embodied in the firepower scoring. Remarkably enough, the systems do not differ notably in their estimates of the relative lethality of U.S. and Soviet units. Given their comparable valuations, since it embodies factors, such as accuracy, in which the U.S. is generally agreed to enjoy an edge, the WEI/WUV system may be considered the more conservative of the two. The methodology is fully elaborated in *Final Report: Weapon Effectiveness Indices/Weighted Unit Values: Volume I, Executive Summary*, Prepared by The War Gaming Directorate, U.S. Army Concepts Analysis Agency (Study Report CAA-ST-73-18) Bethesda, Maryland, April 1974.

sion's front end, or "teeth," as it were. Not only should the United States be able to position *corps* assets in the region, but the second delay phase has, as one of its primary functions, the attrition of precisely those teeth which weigh so heavily on the WEI/WUV scale. In addition, at these distances from the Soviet Union, the RDF would have a clear advantage in close air support, another factor not embraced by the 1.17 ratio derived above. When all these factors are considered, parity, the most conservative planning factor of all, seems altogether plausible.

DYNAMIC FACTORS AND THE BATTLE OF KHUZESTAN. Division counts and these more refined measures—indeed all static indicators—ignore a host of factors which may prove decisive in war. For this reason, over-reliance on such approaches is ill-advised. Morale, mobility, logistics, and coordination—factors not reflected in such static measures—have often tipped the balance. Granted. But where, in any of these less tangible and perhaps decisive areas, would the Soviets enjoy a relative advantage?

The least tangible, morale, is by far the most difficult to assess. But, descriptions of the Allied resupply of Russia through the Persian Corridor may suggest the type of fatigue these routes would exact.

Mile after mile of washboard roads took toll on men as well as vehicles. As an anonymous military scribe put it, vibration "shook the trucks to pieces . . . and pounded the men's kidneys to jelly."⁴⁹

Though an open question, such physical stress, when compounded by the trauma of surprise ambush day and night in the Zagros, would hardly seem to contribute to the *élan* of Soviet troops.

Even were such punishment to galvanize the steely invaders, the Soviets would not enjoy the advantage of mobility, canalized as their descent would be, into a very few corridors onto Dezful. The RDF would not be so channeled, operating from the relatively open lowlands south of the Zagros. Moreover, insofar as Soviet training consists in refining the advance in broad echelons, that training and that tactic are wholly inappropriate to this terrain.

As for relative sustainability, in Khuzestan it is the RDF which could avail itself of a shorter and more secure line of communication certainly for the first few weeks, after which time the RDF's reliance on long-distance sea-lift

49. T. H. Vail Motter, *The Persian Corridor and Aid to Russia*, (Washington D.C.: Office of The Chief of Military History, Department of The Army, 1952), p. 327. More historical information on aid to Russia through the Persian Gulf may be found in Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy 1940-1945* (Washington D.C.: Office of the Chief of Military History, Department of The Army, 1955).

would grow. And, while there is debate concerning the interdiction which that sea line of communication might suffer, it is hard to see it as being any *more* vulnerable than Soviet lines, strung out as they would be over hundreds of miles of vulnerable terrain. Nor, as we shall see, would the Soviets be likely to enjoy any advantage in the aerial resupply of forces.

More important, perhaps, than questions of morale, mobility, training, or sustainability is that of coordination. In particular, even the quite acceptable WEI/WUV estimate of a 1.17 to 1 lethality ratio was predicated on the assumption that all of the Soviet divisions emerge from the Zagros *at the same time* and instantaneously constitute themselves as a seven-division fighting force. If they come through two divisions or three divisions at a time, they can be taken on piecemeal and, by such measures as those above, would be grossly outweighed by the RDF. Indeed, at anything less than a simultaneous arrival, the Soviet forces would be unlikely to achieve parity with the RDF.

The coordination problem was not lost on the thorough Soviet planners, who wrote,

As a result of the mountainous terrain structure and because of the few roads, the combat engagements will be carried out mostly with mixed units which, at times, must operate completely independently. For this reason, the coordination of individual separate columns . . . is of exceptional importance.⁵⁰

To recognize the problem is one thing. To solve it is another. And there is no neat way for the Soviets to circumvent it. Concentration (reducing the number of advance axes) in the interest of simultaneous arrival merely raises the value of each choke point while reducing their number, thus simplifying the RDF's delaying operations. On the other hand, dispersion (raising the number of advance axes), while forcing the United States to spread its resources over a greater (but still very small) number of choke points, exacerbates the coordination problem, possibly reducing the land threat with which the RDF would ultimately contend in Khuzestan. Neither alternative should be especially attractive to the Soviets.

The above points are summarized in Table 1.

While the more refined WEI/WUV ratio falls well within the conservative defensive criterion of 1.5 to 1, elimination of the WEI/WUV's pro-Soviet bias, and inclusion of close air and other factors would reduce the actual ratio to

50. *Soviet Command Study*, pp. 240-241.

Table 1. Relative Capabilities: Battle of Khuzestan

Measure	Soviets	RDF	Lethality Ratio
Divisions	7	4	1.75
U.S. Division Equivalents	4.69	4	1.17
Other Factors			Effect on Ratio
Morale	?	?	?
WEI/WUV Bias	—	+	reduces
Close Air Support	—	+	reduces
Battlefield Mobility	—	+	reduces
Coordination	—	+	reduces

still less than the quite acceptable 1.17. Indeed, without virtually perfect coordination, the Soviets would be unlikely to achieve more than parity with the RDF.

A DRIVE FROM AFGHANISTAN? It might be added that an overland drive from Afghanistan, which would be extremely difficult in its own right, would merely exacerbate the coordination problem if attempted as the eastern axis of a grand envelopment. The distances to Khuzestan from Afghanistan are considerably greater than those from the Soviet Union. This alone would make a simultaneous arrival difficult. In addition, there are no surfaced roads directly across the intervening desert of the Khorassan. There, the Soviets tell us,

During summer the temperature is so high that the inhabitants of the cities withdraw to the so-called "Sirisamin" (cellar) and along the caravan routes, the caravans usually do not continue travel during the day.⁵¹

Water sources are confined to a few oases. In addition to sending up clouds of dust to advertise its position, a summer blitz across this terrain would ensure a very high mechanical breakdown rate. Roads south of the desert either terminate in the difficult Zagros or traverse them. On the other hand, the "end run" above the Khorassan (which reduces to a single road along the base of the Golul Dagh Mountains.) would force a crossing of the Zagros from the north, over the same limited and vulnerable system of roads already glutted by the advance from the Soviet Union. To pull any significant

51. *Ibid.*, p. 42.

force from Afghanistan would require a reinforcement of Soviet efforts there, thus entailing a draw-down from other theaters.

While summer is surely the worst time in the Khorassan, winter finds the mountain passes of northern Iran snowed in. In the spring thaw, lowlands, particularly those of the Caspian basin, are transformed into a swampy morass, precluding off-road traffic.⁵² Finally, fall, though probably the best season in general, is the rainy season in the northwest, opposite which the bulk of Soviet forces are deployed. During that time, the main rivers of the Azerbaidjan become unfordable torrents, making indispensable what few bridges exist. In any season, an attempt to coordinate the simultaneous advance of forces along all of these axes would be, in short, a logistician's nightmare.

For all these reasons and by any measure—static or dynamic—a pure overland advance would be exceedingly risky for the Soviets. Thus, one may expect them to consider airlifted assault. Airlift, however, would face vulnerabilities which are just as severe.

Airlifted Assault

The Soviets have developed a considerable airlifted power projection capability, as demonstrated in the October War, Angola, Ethiopia, and Afghanistan. However, none of these lifts was opposed by anything even remotely resembling the kind of airpower the Soviets would face in Iran. Their problem is not one of lift capability *per se*; rather it is fighter escort for the lift. Without the protection provided by that escort, the Soviets' chances for an airborne insertion and aerial resupply of forces would be slim. If the United States exploited warning, the Soviets' prospects would be very slight indeed.

Recognizing the importance of fighter escort, it is important to note that, despite strides since Khrushchev's ouster, the Soviets remain outclassed in the air-to-air combat arena.

In addition to the technological edge,⁵³ U.S. pilot skill exceeds that of the Soviets. Soviet pilot training is far more routine and is far less realistic than

52. In fact, the main port of Pahlavi is situated in an area called the "Gilan," meaning "swampy, muddy place." *Ibid.*, p. 161.

53. While the very sophistication of U.S. systems has created serious problems in areas of support, notably those of sortie generation and sustainability, it is far from clear that the Soviets have avoided the same problems. There is every reason to believe, in fact, that while Soviet air systems are by some measures, simpler than those of the United States, the Soviet ground

American.⁵⁴ Furthermore, the U.S. pilot flies roughly twice as much as his Soviet counterpart.⁵⁵ American non-flying hours are spent, in part, on very sophisticated simulators, of which the Soviets are reported to possess nothing comparable. Finally, U.S. training has built on a great deal of combat experience gained since World War II, in Korea and in Vietnam, far more than the Soviets. Given these advantages—more realistic training, and more of it, in addition to the benefits of far more combat experience—it is difficult to imagine the United States enjoying anything less than a significant margin in pilot skill, the importance of which cannot be overemphasized. Essentially alone, it accounted for the exchange ratios of 12.5 to 1 recorded in Indochina (F-4 *vs.* MiG-21). And when combined with a technological advantage, it goes a long way toward explaining the extraordinarily high exchange rates logged by the Israelis in 1967 and 1973 (20 to 1 and 40 to 1 respectively).⁵⁶ Thus, even if this conflict presented a classical air-to-air combat situation, the Soviets would have little basis for confidence that they would enjoy air superiority. That being the case, under the highly *non*-classical conditions of Iran, the RDF would enjoy a number of pronounced advantages.

For one, the exchange ratios of the Korean and Vietnam conflicts, as well as the remarkable Israeli ratios, were kills of *fighters* by other fighters. In opposing a Soviet airlift, however, U.S. pilots would be attempting to shoot down Soviet *transports*—very sluggish, easily acquired, and highly vulnerable

support (maintenance, logistics) system is so much less efficient than the American that, in the net, the Soviets find their advanced systems to be no more supportable than the U.S. finds its own to be. In turn, it can be argued that, due to the inefficiency of their ground support environment, the Soviets face equally severe problems in sortie generation and sustainability. Joshua M. Epstein, *Political Impediments to Military Effectiveness: The Case of Soviet Frontal Aviation* (doctoral dissertation, MIT, 1980).

54. The Soviet military literature is full of high-ranking commentary attesting both to the routinized character of Soviet pilot training and to its adverse effect on flexibility. Characteristic examples are: Pavlov, General-Lieutenant G., "Inexhaustible Reserve," *Krasnaya Zvezda*, August 4, 1976 (April 1977); Konstantinov, General-Colonel Anatoliy Ustinovich, "Thorough Knowledge of Affairs," *Krasnaya Zvezda*, March 13, 1977 (June 1977); or Babayev, General-Colonel Aleksandr Ivanovich, "Flight and the Combat Maneuver," *Krasnaya Zvezda*, December 23, 1976 (April 1977). For these and all subsequent Russian citations, the parenthesized date is for the English language version appearing in *Soviet Press Selected Translations*, Directorate of Soviet Affairs, Air Force Intelligence Service.

55. Robert P. Berman, *Soviet Air Power in Transition*, p. 57.

56. All of these data are given in Steven J. Rosen, "What a Fifth Arab-Israeli War Might Look Like," *International Security*, Volume 2, Number 4 (Spring 1978), p. 160. See, in general, Peter de Leon, *The Peacetime Evaluation of the Pilot Skill Factor in Air-to-Air Combat R-2070-Pr* (Santa Monica, CA: The Rand Corporation, January 1977).

targets. The situation then is highly preferential to the defense. Khuzestan, moreover, is simply out of range of virtually all Soviet tactical fighters, based either in Afghanistan or the Soviet Union.⁵⁷ The direct airlift to Khuzestan, for these reasons, would be vulnerable in the extreme.

Much of central Iran is also out of range for all but late model Soviet fighters (whose adaptability to the local basing system must be considered an open question).

Even where central Iran is within range of those aircraft, it may be well out of range of Soviet ground control.⁵⁸ Under Soviet ground-controlled intercept (GCI), target acquisition, vectoring, and other critical intercept instructions are transmitted from stations on the ground. If not actually out of range of Soviet-based GCI, then fighter operations in much of central Iran and all of southern Iran could be at ranges where the GCI link is highly susceptible to jamming by, for example, carrier-based EA-6B (4 per carrier) electronic warfare aircraft. However rigidly the Soviet pilot is trained to fight under ground control, he is virtually untrained to fight without it.⁵⁹

The problem, from the Soviets' perspective, is how to get the GCI south of the northern mountains. Overland, as we've seen, would not be promising and would certainly be slow. So, if the GCI is to be established with any dispatch, it must be airlifted in. In order to airlift it in however, fighter escort would be essential. But the escort cannot be run effectively until the GCI is in place! There is the rub.

Even if airlanded in central Iran, the GCI radars and other components would be highly vulnerable to low-altitude attack by U.S. aircraft, especially if, with forward-looking infra red (FLIR) technology, the strikes were conducted under cover of darkness. And, while Soviet airborne reconnaissance of low-level attack is progressing, it is generally agreed that, even in daylight,

57. The possibility of re-equipping the longer-range SU-24 advanced ground attack aircraft for air-to-air combat is unpromising. First, it is an open question whether rudimentary Afghan bases could accommodate the system. But more important is the fact that the SU-24 pilot, rigidly drilled in his ground attack mission, cannot easily be converted to a master of air-to-air combat, even if his aircraft could be so adapted. Similarly, air-to-air pilots are unlikely ever to have flown the SU-24 and would be ill-prepared to substitute for its usual operators.

58. Soviet problems in maintaining the integrity of the ground control data link as range increases are discussed in Colonel V. A. Uryzhnikov, "In a Complex Situation," *Krasnaya Zvezda*, January 7, 1977 (April 1977).

59. *Soviet Aerospace Handbook AF Pamphlet 200-21* (Washington D.C.: Department of the Air Force, May 1978), p. 45.

Soviet fighters do not possess a sophisticated look-down/shoot-down capability.⁶⁰ These factors support the assessment of General David Jones, Chairman of the Joint Chiefs of Staff, who in June of 1980,

told the Senate Armed Services Committee that "a few AWACS (Airborne Warning and Control Aircraft) and a few fighters could just devastate an airborne operation," if the Soviet Armed Forces sought to seize oil fields in the Persian Gulf region.⁶¹

Thus, while the Soviet overland invasion is highly vulnerable, the airlifted assault would not be any less so.

It is implicit in such assessments that warning time is exploited and that the decision to use force be taken. Otherwise, the West's significant advantages could erode and her promising defensive avenues could quickly close.

Carrier Vulnerability

In a Soviet invasion of Iran, the "worst case" scenario would posit the simultaneous initiation of airlifted and overland assaults, coordinated with a massed Soviet bomber attack on the carriers. In discussing that threat, certain points should be stressed.

First, the strategy proposed here has four basic elements: two delay phases against the overland threat, the interdiction of Soviet airlift, and a build-up and combined arms defense in Khuzestan. *This*, and not the carriers, *per se*, is what the Soviets must overcome to secure control of Khuzestan's oil. After all, even to sink the carriers would not, in and of itself, transport a single Russian to Khuzestan. Nor would it guarantee that the United States would be incapable of carrying out its own strategy. If the carriers can survive long enough to ensure that the four basic operations are executed, they will have performed their war mission.

Just as carrier interdiction is not, *per se*, the Soviets' war goal, so, carrier survival is not, *per se*, the RDF's goal; that is to deny Soviet control of Khuzestan. And if American interests in the area are vital, then the United States should be willing to run the risk that carriers will be lost. The carriers, after all, were bought to fight. And while their vulnerability can and should be minimized, in a fight, they may be destroyed.

60. *Ibid.*, p. 66.

61. John M. Collins, *U.S.-Soviet Military Balance, Concepts and Capabilities 1960-1980* (New York: McGraw-Hill, 1980), footnote, p. 394.

The carriers are at their most vulnerable only in the initial period, when the northern tier of Iranian choke points is being struck and the Marine perimeter in Khuzestan is being established. But even in that period, as noted above, the carriers can be employed in a way that avoids their passage into the Persian Gulf, leaves them substantial resources for air defense, and allows for their timely and rapid withdrawal to the Arabian Sea area. And while all is not lost even if the carriers are lost, there is no particular reason that they should be.⁶²

THE SOVIET BOMBER THREAT. Of the two Soviet bomber forces, Long-Range Aviation (LRA) and Naval Aviation, the former is deployed solely to the European Soviet Union (2 Air Armies) and the Far East (1 Air Army).⁶³ A significant diversion of LRA's bomber resources would clearly represent a sacrifice in the Soviets' capacity to execute either the Sino-Soviet or NATO contingencies at the same time, not to mention those strategic nuclear missions for which LRA might be withheld. Particularly in the European theater, the presence of LRA and of Naval Aviation's Northern and Baltic Fleet bomber forces would be critical, if the Soviets are to credibly threaten the execution of their short-war doctrine, or the achievement of their vaunted preemption there.

Accordingly, unless we assume the Soviets are willing to free up forces otherwise earmarked to cope with those threats to Europe, our attention should first be directed to the Black Sea and Pacific Fleets of Naval Aviation. However, were the entire Pacific Fleet force reallocated to the Gulf, the Soviets would have sacrificed maritime strike operations in defense of critical facilities in the Vladivostok area. Similarly, a full redeployment of the Black Sea fleet would free U.S. forces in the Eastern Mediterranean from the threat of bomber attack. While these considerations could militate against such wholesale Soviet redeployments, even if they were attempted, one may doubt the basing capacity of the southern Soviet Union to accommodate them. Finally, the *total* Backfire inventory of Naval Aviation's *four* fleets is

62. Of course, should the carriers be destroyed by nuclear means, a U.S. nuclear response on the northern transportation system would still deny the Soviets their posited objective, as would the clearly more provocative nuclear response on division bases, rail lines, air fields, supply dumps, or other conventional military facilities in the southern USSR. For an insightful discussion of the latter action and its possible implications, see Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), pp. 160-162.

63. *The Military Balance 1980-1981*, p. 9.

reported to be 70.⁶⁴ Thus, even on the questionable assumption that a sizeable portion of *two* (Black Sea and Pacific) Fleet bomber forces were allocated to this mission, the number of Backfires involved could be even more limited.

As for warning of such an attack, the Soviets would need a certain amount of time to ready their forces. They might succeed in doing so under cover of deception. But if, as postulated, the bomber attack is to take place simultaneously with the overland drive, it must wait until the Soviet ground forces are mobilized. And of that activity, the United States would have warning. It would certainly be odd for the Soviets to maximize surprise in the bomber attack by launching it a month before the ground forces were ready to exploit it. In short, the United States *would* have warning time in which to ready its resistance.

"LAYERED" CARRIER DEFENSES. Although there are uncertainties, when the above factors are taken into account, the bomber threat facing the carriers' multiple defensive "layers" does not seem unmanageable.

Assets for the so-called "outer air battle," in the words of the Chief of Naval Operations Admiral Hayward,

consist primarily of the E-2 B/C airborne early warning aircraft used to detect and track incoming aircraft and missiles, the F-14 variable-geometry fighter which is capable of launching and tracking as many as six AIM-54A long-range PHOENIX air intercept missiles, and the F-4 fighter aircraft capable of launching the AIM-7 SPARROW all-aspect air intercept missile.⁶⁵

Secretary of the Navy Claytor has testified, moreover, that the F-14 "can go out and shoot down the Russian's Backfire out of range of its ability to launch a missile."⁶⁶

Soviet bombers surviving that first layer, while remaining susceptible to further counterair (air-to-air) resistance and jamming, would pass into the second ring of carrier defenses. Again, the current debate presents an image of carriers operating alone. But the carrier, albeit a *prima donna*, is a social animal whose coterie of guided missile escorts is designed to provide it with a tough area defense.⁶⁷

64. *Ibid.*, p. 11.

65. U.S., Congress, House, Committee on Appropriations, *Department of Defense Appropriations For 1980, Hearings before the Subcommittee on the Department of Defense, Ninety-Sixth Congress, First Session, Part 2*, p. 266.

66. *Ibid.*, p. 277.

67. *Ibid.*, p. 266.

Finally, the Soviet bombers would encounter the carrier battle group's so-called "self-defense." Here,

... we look at two types of "kills"—the "hard kill" in which we destroy the inbound missile and the "soft kill" in which we deceive the missile so that it misses the target.⁶⁸

In addition, it should be borne in mind that the closer the Soviet bomber gets to the carriers, the thinner becomes its fighter escort. And, over a broad perimeter around the carriers, it would be likely to lack any fighter protection. Essentially the same very serious vulnerability would then prevail as in the case of Soviet airlift.

If the bomber survives to launch its missiles, and against the carrier battle group's layered defenses, the missiles are neither intercepted nor deceived, there still remains the question of accuracy. One may assume hit probabilities greater than fifty percent if one chooses, but it would be irresponsible not to raise those assumed on the RDF's side correspondingly. And to do so would allow the RDF's northern interdiction campaign (Phase I) to be conducted more quickly.

Finally, even a hit is not necessarily a kill. Carriers can be rather durable entities.

During training exercises in 1969, the nuclear carrier ENTERPRISE endured explosions of nine major caliber bombs (equivalent in explosive weight to 6 anti-ship cruise missiles) on the flight deck. All essential ship systems remained operable, effective damage control contained the effects of the fire, and the ship could have resumed flight operations within hours.⁶⁹

While the remark applies to ship- and submarine-launched cruise missiles as well, the carrier's cruise missile defense is likewise one layered in depth, terminating in "rings of long- and medium-range surface to air missiles (SAM), close-in SAMs, and aircraft."⁷⁰ The F-14 is reported to have demonstrated a capacity to engage, again, six.⁷¹ The tactical ASW system of the carrier task force is organized along the same principals and might be visualized as an inverted, underwater variation on its anti-air warfare rings.

These capabilities give the carrier battle group a more than fighting chance in the Gulf region; an area in which the limited Soviet surface fleet would

68. *Ibid.*

69. *Ibid.*, p. 268.

70. *Ibid.*, p. 282.

71. *Ibid.*, p. 264.

lack comparable defensive avenues and logistical support, i.e., underway replenishment. Indeed, Washington officials have stated that "even if they bring in the Minsk (V/STOL Carrier), it would be no contest."⁷²

Destruction of the carriers would, *per se*, be a formidable task. Moreover, in order to frustrate the larger four-point RDF strategy proposed here, the Soviets would have to destroy them *very* fast. And, if the United States uses its warning time to ready the carriers' imposing defenses, then even focusing the bombers on their destruction, it is hard to imagine great Soviet confidence of success. And that allocation is questionable.

DIVERSION OF SOVIET BOMBERS. For the Soviets to focus the full bomber threat on the carriers would leave them virtually no resources with which to harass the Marine landing in Khuzestan. As noted above, the preponderance of Soviet *tactical* air effectively lacks either the range to attack the Khuzestan landing or the capacity to operate from the crude Afghan bases which might be within range.⁷³

Diego Garcia, which the United States already controls, will shortly be capable of accommodating the B-52s. Given its importance as a maritime staging area generally, Diego Garcia would be yet another target to which the Soviets might be forced to divert bombers.

In short, the Soviets face a target system considerably more complicated than the two carriers. And this contributes to the carriers' already substantial survivability by forcing some dispersion of Soviet bomber resources.

If, during the warning time which should be available, a third carrier were brought on line, the RDF's interdiction and landing operations might be conducted even more rapidly. In that case, the Soviets would have a) yet more targets to destroy, b) an even denser air defense to overcome in doing so, and c) even less time in which to accomplish the task.

Conclusions

While facing a redundant, flexible, and in fact rather dispersed resistance, the Soviets possess only two viable modes of advance into Iran: airlifted and

72. "Soviet Naval Presence Doubles in Indian Ocean, Lacks Support," *Aviation Week and Space Technology*, April 6, 1981, p. 60.

73. If we are to assume that from Afghanistan, the BEAR can penetrate the F-14 net to attack U.S. carriers in the Persian Gulf or Gulf of Oman, then the B-52H should certainly be assumed capable of penetrating the MiG-21 (or MiG-23) net to attack Afghan bases. *Spif's* B-52H night-low altitude mission is specifically designed to exploit the weakness of Soviet look-down/shoot-down capabilities. George C. Wilson, "... New Conventional Role for B-52 Bombers," pp. 6-7.

overland. In exploiting the Soviets' numerous vulnerabilities, the RDF's essential missions are four: to delay, in two successive phases, the overland advance and to interdict Soviet airlift, while building up a combined arms defense in Khuzestan. If the Soviets' goal is control of Iran's oil, this strategy, rather than a forward defense is appropriate. And if warning time is exploited, U.S. forces should be able to execute the plan conventionally. In the pitched battle of Khuzestan, that is, the Soviet force which could be supported without penalizing their capacity to handle simultaneous contingencies would be unlikely to enjoy any meaningful superiority over an RDF assembled under the same strategic constraint. And if the deep problem of Soviet coordination were exploited, it is questionable whether the Soviet force would even achieve parity with that RDF.

The Europeans can contribute significantly to the defense of Western interests in the Gulf by maintaining Central Front forces in sufficient readiness that the Soviets are sternly reminded of their simultaneous contingencies.

To argue the feasibility of a conventional defense is not to deny that the RDF has substantial work ahead of it. It does, particularly in the areas of logistics, training, command and control, and in basic detailed planning for the employment of its forces, some of which must be tailored very precisely to the tactics contemplated here. However, while stressing that the RDF faces challenges, the current situation warrants neither the kind of pessimism that has been heaped upon it nor an ill-considered "drive for bases" which may flow from overassessments of the Soviet threat.

Militarily, the RDF is clearly better off with more regional basing than it is without it. And there is no reason for the United States to abandon its efforts to negotiate suitable arrangements in the event of crisis. In doing so, however, the United States can afford to bargain from a position of strength, eschewing entanglements with regimes less worthy of American political support than military relationships may suggest; regimes whose stability (as Iran should have taught) may be far more tenuous than Americans might wish to believe; regimes which, in the final analysis, may acquire political interests quite inimical to those of the United States and to those of its proven ally, Israel.

No one has found a way to predict with *certainty* the outcome of any given conflict. But the invasion of Iran would be an exceedingly *low confidence* affair for the Soviets—a fact which I believe they've known for roughly 40 years. Indeed, it can be argued that they now regard it as far less attractive even than their *Command Study* of 1941 portrayed it as being. While, to be sure, Soviet military capabilities have evolved very significantly since that time, so

have those of the United States and, more importantly, so have the Soviets' military commitments and deterrent needs. Certainly to cover three contingencies simultaneously would strain the United States. But beyond China, NATO, the Poles, and Afghanistan, an invasion of Iran would be the Soviets' fifth contingency. And it is one which, as we've seen, could severely hamper their capability elsewhere.

The Soviets face the grave threat that the military cost of a move on Iran would vastly outweigh its potential benefits—indeed, the risk that all such benefits would be decisively denied. It can only be assumed, therefore, that the Soviets would prefer to secure their ends in the Gulf by other means, by coercive measures short of direct intervention. All of those measures find their underpinning, finally, in the appearance of crushing Soviet military power and in the perception that the Soviets are prepared to use it to get what they want, and are confident of doing so with success. The fundamental question, and it is a political one, is this: by overdrawing the direct Soviet threat to Iran—or to any country—do we not aid the Soviets in their diplomacy of coercion?

By presenting the United States as if it alone suffers simultaneous contingency problems, and by presenting the Soviets as if they enjoyed some clear superiority in the Gulf, we do. In the final analysis that is not "getting tough" with the Soviets.

One "gets tough" with an adversary by credibly threatening to exploit his military vulnerabilities, not by refusing to admit that any exist, as is the general practice among so-called "hard-liners." Such talk, however, is not "hard" on the Soviets. On the contrary, the rhetoric of an invincible Soviet threat, while alienating those whose cooperation we seek and/or exposing them to the coercion we fear, merely discredits the larger cause it purports to champion—management of the global competition and deterrence of war. These are feasible goals. In the case of the Gulf, forces exist which can and should be postured to communicate that fact. While they are not invincible, the Soviets are attentive. They will get the message.

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Horizontal Escalation | Joshua M. Epstein

Sour Notes of a Recurrent Theme

The deterrence of Soviet military aggression has been the basis of American national security policy since the Truman Administration. The means proffered to secure containment, however, have changed with each administration since. But they have all partaken of two archetypal approaches: the symmetrical and the asymmetrical. John Lewis Gaddis has characterized them succinctly:

Symmetrical response simply means reacting to threats to the balance of power at the same location, time, and level of the original provocation.

Asymmetrical response involves shifting the location or nature of one's reaction onto terrain better suited to the application of one's strength against adversary weakness.¹

Following the invasion of Afghanistan, former President Carter committed the United States to the deterrence of further Soviet aggression in the Persian Gulf region. While that deterrent commitment was affirmed intact by the Reagan Administration, the symmetrical thrust of the Carter Doctrine² was not; whether one dubs it "horizontal escalation" or something else,³ the Reagan Administration's attraction to an asymmetrical conventional strategy for the Persian Gulf was quickly evident.

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1. John Lewis Gaddis, "Containment: Its Past and Future," *International Security*, Vol. 5, No. 4 (Spring 1981), p. 80. For a thorough analysis of American oscillations between the two approaches, see Gaddis's *Strategies of Containment* (New York: Oxford University Press, 1982).

2. "... an attempt by any outside force to gain control of the Persian Gulf region—will be repelled by any means necessary, including military force" (emphasis mine). See 1980 State of the Union Address, U.S. Congress, Senate, Committee on Foreign Relations, "U.S. Security Interests and Policies in Southwest Asia," Hearings before the Subcommittee on Near Eastern and South Asian Affairs, Ninety-Sixth Congress, Second Session, February–March 1980, p. 350.

3. "Geographical escalation" and "war-widening strategy" are other names sometimes used.

Shortly after taking office, Reagan Administration strategists reportedly issued guidelines to the military "to hit the Soviets at their remote and vulnerable outposts in retaliation for any cutoff of Persian Gulf oil." In Secretary of Defense Caspar Weinberger's view, "our deterrent capability in the Persian Gulf is linked with our ability and willingness to shift or widen the war to other areas."⁴

One possibility cited at the time was "to threaten the Soviet brigade in Cuba if Moscow or its surrogates move into the Persian Gulf." Direct conventional defense would certainly be attempted "whatever the odds," but the prospects for symmetrical response were accounted as grim "given the Soviets' inherent geographical advantages and their superior number of available ground forces."⁵

The same language was carried into the Administration's first Defense Posture Statement a year later.⁶ But, in the interim, the strategy seemed to have assumed larger proportions: "If Soviet forces were to invade the Persian Gulf region, the United States should have the capability to hit back there or in Cuba, Libya, Vietnam, or the Asian land mass of the Soviet Union itself."⁷ The list of remote "Soviet" vulnerabilities was longer and the Soviet homeland itself had emerged as a potential target for horizontal escalation. Similarly, the procurement of two additional large-deck nuclear aircraft carrier battle groups was advocated not merely for their capacity to lash back at Soviet weak points, but, on the contrary, for the alleged "capability of a 15 carrier 600 ship Navy to fight and win in areas of highest Soviet capability" (emphasis mine).⁸ But, as ever more challenging horizontal options emerged, the Administration's commitment to direct (symmetrical) defense was reaffirmed: "whatever the circumstances, we should be prepared to introduce

4. George C. Wilson, "U.S. May Hit Soviet Outposts in Event of Oil Cutoff," *The Washington Post*, July 17, 1981, p. 1.

5. *Ibid.*

6. For example, "... even if the enemy attacked at only one place, we might choose not to restrict ourselves to meeting aggression on its own immediate front. ... A wartime strategy that confronts the enemy, were he to attack, with the risk of our counteroffensive against his vulnerable points strengthens deterrence and serves the defensive peacetime strategy." Caspar W. Weinberger, Secretary of Defense, *Annual Report to the Congress for Fiscal Year 1983* (Washington, D.C.: U.S. Government Printing Office, 1982), pp. I-16, I-17 (hereafter referred to as *FY 83 Posture Statement*).

7. Leslie H. Gelb, "Reagan's Military Budget Puts Emphasis on a Buildup of U.S. Global Power," *The New York Times*, February 7, 1982, pp. Z6, Z7.

8. John Lehman, Secretary of the Navy, "America's Growing Need for Seaborne Air Bases," *The Wall Street Journal*, March 30, 1982.

American forces into the region should it appear that the security of access to Persian Gulf oil is threatened."⁹

Both direct defense and asymmetrical response were apparently embraced; under the latter, not just points of Soviet weakness, but points of extreme Soviet strength as well were contemplated as horizontal targets. This "do everything" quality of the articulated strategy was compounded by the Administration's pointed rejection of planning around any specific set of prototypical (or real) contingencies (e.g., the one-and-one-half or two-and-one-half war sizing devices)¹⁰ and its exhortations to prepare for "prolonged conventional wars simultaneously in several parts of the globe."¹¹

Predictably, when the military was called upon to attach a price tag to the strategy, it was whopping: hundreds of billions—by some estimates \$750 billion¹²—above and beyond the \$1.6 trillion Reagan five-year defense plan. The strategy's requirements were reportedly "so grandiose that the Joint Chiefs of Staff says carrying them out would require 50 percent more troops, fighter planes, and aircraft carriers than are now deployed, along with another Marine amphibious force."¹³

It was against that sobering budgetary backdrop that William Clark, in his first major speech as National Security Adviser, announced, "there is not enough money available to eliminate all the risks overnight."¹⁴ And having thus resurfaced, the budget constraint has since imposed a slackening in the planned pace of American military growth, in turn stimulating a more animated debate on the ranking of defense priorities.

Basic questions remain unresolved, however, concerning the advisability of a "war-widening strategy" in principle, particularly about its horizontal counteroffensive component. And those underlying questions are not addressed merely by admitting a cutback in the pace of funding; the more basic

9. George C. Wilson, "U.S. Defense Paper Cites Gap Between Rhetoric, Intentions," *The Washington Post*, May 27, 1982, p. 1.

10. *FY 83 Posture Statement*, pp. 1-15-1-16. On the one-and-one-half and two-and-one-half war concepts as peacetime planning devices, see William W. Kaufmann, "The Defense Budget," in Joseph A. Pechman, ed., *Setting National Priorities: The 1983 Budget* (Washington, D.C.: The Brookings Institution, 1982), p. 81.

11. "Flood and Leak at the Pentagon," *The New York Times*, February 1, 1982, p. A-14. Richard Halloran, "Needed: A Leader for the Joint Chiefs," *The New York Times*, February 1, 1982.

12. Robert W. Komer, "Maritime Strategy vs. Coalition Defense," *Foreign Affairs*, Vol. 60, No. 5 (Summer 1982), pp. 1128-1129. See also "Flood and Leak."

13. Wilson, "U.S. Defense Paper."

14. *Ibid.*

issue is whether this course, this entire strategic direction, is advisable at all. Moreover, until that issue is settled, the debate on program priorities can only founder.

Recognizing that some—by no means all—within the Administration have “stepped back” to reexamine the strategy’s appeal, it may therefore be constructive for us to raise some of the unanswered questions about “horizontal escalation.” Five seem especially basic: First, what is horizontal escalation supposed to do; what is the goal in an operational sense? Second, given some relatively concrete goal, how is the “proper” horizontal target selected? Related to that, in what ways might horizontal escalation affect the probability of vertical escalation by the United States or the Soviet Union? Fourth, what are the risks of “counter-horizontal escalation” by the Soviets? Finally, are there otherwise-avoidable diplomatic costs associated with the strategy? Not only do these questions deserve thought, but the Administration’s attraction to the strategy seems to rest on military premises that are questionable in their own right. Having discussed these issues, the most important question of all—that of credibility—will be addressed.

The Question of Wartime Operational Goals

Without some sense of the operational goal of a military action, it is not possible to select its targets. Neither, *a fortiori*, is it possible to derive the forces required or to assess the adequacy of those already in being. While “carrying the war to other arenas” and “hitting the Soviets at their vulnerable outposts” may sound clear enough at first blush, such phrases in fact provide little guidance to the military planner, charged with designing a force, or to the public, charged with paying for it. What, exactly, is the goal of horizontal escalation?

Is it to *destroy something* in order to *punish* the Soviets, perhaps holding out the prospect of further punishment unless they comply with American terms, whatever those might be? Is it to *take something hostage*, hoping thereby to bargain a return to the prewar status quo or some other political arrangement? Obviously, not both goals can be achieved: one cannot hold hostage what one has already destroyed.

Although it is hard to imagine many Soviet assets whose military acquisition would *compensate* the West for the loss of access to Persian Gulf oil, compensatory acquisition is, in principle, another possible goal, one distinct from punishment or hostage-taking for bargaining purposes.

Perhaps the most intuitively appealing goals for horizontal escalation would be to *inhibit or to induce redeployments of Soviet forces*, thereby improving Western prospects for conventional defense in the original contingency. The appeal is natural enough: attacked at point A, one counters at point B in order (i) to "fix" Soviet forces at point B, preventing their use as reinforcements at point A, or (ii) to force the Soviets to shift forces from A to B.

In the context of European war, the former has long been among the Navy's arguments for "opening up a second theater" by offensive fleet operations against Soviet naval bases in the Western Pacific.¹⁵ And, it is true that in a protracted conventional war between NATO and the Warsaw Pact, Soviet ground forces arrayed opposite China might be redeployed to the West as a third (or fourth) echelon of the Soviet European offensive. "Opening up a second theater" in the Pacific would allegedly tie down those Soviet forces, improving NATO's chances for conventional defense.

In fact, however, the Soviets' freedom to redeploy to Europe—or to the Persian Gulf for that matter—their divisions on the Sino-Soviet border would depend primarily on the posture of the Chinese army, not the U.S. Navy. Admittedly, the Soviets might reinforce their Pacific Fleet's air forces with air power normally deployed inland opposite China. But what real role could the corresponding Soviet ground forces play in either the Pacific sea battle or in defending Soviet naval shore facilities? A role significant enough to "fix" over forty ground divisions? That seems implausible.

Rather than inhibiting Soviet redeployments by "fixing" Soviet forces, geographical escalation could, in principle, *induce* Soviet redeployments. The object in that case would be to draw Soviet forces out of the original contingency, improving Western chances for success there. One open question in this regard is simply: when?

The Reagan five-year defense plan will, by definition, take half a decade to realize. At the end of that period, horizontal escalation might succeed in *forcing* Soviet wartime reallocations, but only if, in the interim, some ceiling on Soviet military growth had been reached. Otherwise, what's to prevent the Soviets from anticipating the strategy by simply *adding forces* in each theater over that interim period? After all, when the Sino-Soviet split presented them with "a new theater" (i.e., their Chinese frontier), the Soviets

15. See, for example, The Congressional Budget Office, *Navy Budget issues for Fiscal Year 1980*, March 1979, p. xviii and *Sea Plan 2000 Naval Force Planning Study*, *Unclassified Executive Summary* (undated), p. 15.

didn't shift many forces. True to Russian form, they essentially built. And, unless there's some "limit to growth," it may be hard to force Soviet reallocations, at least between theaters in the U.S.S.R.

To be sure, there may be military constraints in the Soviet offering. But if there are, the Reagan Administration has certainly not suggested them by its review of the Soviet military buildup and its projections of continuing growth as Soviet military *investment*¹⁶ comes to fruition. In short, a reallocate goal for horizontal escalation seems to entail a Soviet military growth ceiling, while the Administration's Soviet projections seem to deny the existence of any such limits.¹⁷

Targets: Soviet Value, U.S. Diversion, and Vertical Escalation

Punishment (destructive retaliation), hostage-taking, compensatory acquisition, fixing Soviet forces, or inducing their redeployment—these may not be the only possible rationales for horizontal escalation.

But, whatever its operational goal (punishment, hostage-taking, etc.), the compelling effectiveness of the horizontal action will surely depend upon the value placed by the Soviets upon its target. After all, the mere fact that a Soviet outpost is vulnerable does not make it valuable, as Secretary Weinberger recognizes: "If it [the counteroffensive] is to offset the enemy's attack, it should be launched against territory or assets that are of an importance to him comparable to the ones he is attacking."¹⁸

In practice, however, it may be difficult to identify a "horizontal target" which is of sufficient Soviet value to compel the behavior sought, but at the same time is not of such great value as to stimulate rash and grossly disproportionate (e.g., nuclear) Soviet responses.

It is an open question whether offensive sea control (attacking Soviet Fleets in their home waters) would be the most efficient way to secure Western sea

16. Investment is stressed over spending in FY 83 *Posture Statement*, pp. II-4-II-7.

17. Some might argue that this criticism isn't fair because it presents horizontal escalation as a strategy toward which the U.S. is building for the future when, in fact, they will claim, horizontal escalation is only an interim strategy until the U.S. can build up greater conventional defenses in the Gulf. But, if horizontal escalation is an interim measure with direct conventional defense the ultimate goal, then why is the Administration spending so much on carrier battle groups for "outyear" counteroffensives and so much less on programs directly related to Gulf defense (e.g., airlift and sealift) today?

18. FY 83 *Posture Statement*, p. I-16.

lines of communication.¹⁹ But, even if it otherwise were, such offensive naval operations could well run the nuclear risk, and not simply because they would involve hitting the Soviet homeland. Beyond that, in conducting offensive operations against either the Soviet Northern or Pacific Fleets, it might be difficult for the U.S. Navy to avoid sinking Soviet strategic ballistic missile submarines (SSBNs). And if American operations were to degrade, even inadvertently and by conventional means, the Soviets' strategic nuclear retaliatory capabilities, the Soviets might not *interpret* those operations as "conventional sea control," but as conventional precursors to nuclear attack—conventionally executed nuclear damage-limiting first strikes, if you will.²⁰

As for targets of too little value, were the Soviets to end up with control of oil fields in the Persian Gulf, they could certainly afford to buy a new merchant fleet,²¹ had theirs been "swept from the seas" in bristling riposte to Gulf aggression. And regarding counteroffensives against Cuba, suppose, just for the sake of argument, that the Soviets were offered a straight trade: they "give up" Cuba and, in return, they get Iran's (or Saudi Arabia's) oil. Would Moscow turn it down? What assurance is there that, behind the compulsory fulminations, the Kremlin would not be willing to let Cuba take a "horizontal beating" if it meant Soviet control of Gulf oil? And, if the Soviets would accept that trade, how "offsetting" would horizontal escalation against Cuba, in fact, be?

Not only may Administration strategists have exaggerated Cuba's value to Moscow, but horizontal escalation against Cuba was reportedly envisioned "if Moscow or its surrogates move into the Persian Gulf" (emphasis mine).²² Are the Iraqis Soviet "surrogates"? Does that mean they have no goals of their own? Would the threat of American retaliation against Cuba (or anyone else for that matter) deter *them*? Would it deter Communist elements in Iran? The Syrians? The PDRY (South Yemen)?

Even if Moscow wished to bridle any of its surrogates lest the U.S. respond against "Cuba, Libya, Vietnam, or the Soviet Union itself," could they do it?

19. See *Navy Budget Issues* and Congressional Budget Office, *The U.S. Sea Control Mission: Forces, Capabilities, and Requirements*, June 1977. Still among the most concise essays on the factors involved in evaluating offense, defense, and requirements in each case is Arnold M. Kuzmack, *Where Does the Navy Go From Here?* (Washington, D.C.: The Brookings Institution, 1972).

20. By far the most comprehensive study of this important problem is Barry R. Posen, "Inadvertent Nuclear War? Escalation and NATO's Northern Flank," *International Security*, Vol. 7, No. 2 (Fall 1982), pp. 28–54.

21. Komer, "Maritime Strategy vs. Coalition Defense," p. 1131.

22. Wilson, "U.S. May Hit Soviet Outposts," p. 1.

The main point, however, is that even with clear goals for horizontal escalation in mind, the selection of an appropriate target seems to require knowledge of the *Kremlin's* valuations. An uncertain affair even in peacetime, the problem would be compounded in war when, among other things, values change.²³

In addition to the problem of Soviet valuation, there is the problem of U.S. diversion. Although contingency-counting has been rejected under the Administration's reforms, horizontal escalation nonetheless ensures that the U.S. confronts two contingencies (main plus horizontal) where it might have faced only one (main). And, even assuming that a horizontal target of the "proper" Soviet value were selected, the appropriate action against that target could require a significant commitment of American forces, over and above those allocated to direct defense in the initial contingency.

The obvious question, therefore, is whether the U.S. would have to divert to horizontal offensives, forces that might otherwise have been applied (initially or as reinforcements) to the main defense, reducing the latter's prospects for success. If so, would not the strategy make it more likely that the U.S. find itself under pressure either (a) to concede defeat in the main contingency or (b) to use nuclear weapons there?

On the horizontal front, it should be noted that unless these counteroffensives are to be initiated preemptively—i.e., *before* the "provoking" Soviet attack, an option Secretary Weinberger has explicitly rejected²⁴—then they will probably not achieve tactical surprise. Obviously, they might, but it would be imprudent to design forces on that assumption. And, on the prudent assumption that surprise would not be achieved, the horizontal target might enjoy a number of classical warning advantages (e.g., prepared defenses, cover, dispersal, etc.). These could well exacerbate the diversion problem and, with it, the unpleasant problems of choice between humiliation and vertical (i.e., nuclear) escalation.²⁵

23. This, and many other problems of conflict termination, are discussed in Fred Charles Iklé, *Every War Must End* (New York: Columbia University Press, 1971).

24. FY 83 *Posture Statement*, pp. 1-10-1-11.

25. Indeed, in the worst of both worlds, the U.S. would divert so much force from the Gulf as to come under enormous pressure to use nuclear weapons there, while applying the large resultant counteroffensive force in such a way as to put the Soviets under equal pressure to use nuclear weapons on the horizontal front. Professor Huntington's proposal for a prompt conventional counteroffensive into Eastern Europe seems to invite this dangerous situation. See Samuel P. Huntington, "The Renewal of Strategy," in Samuel P. Huntington, ed., *The Strategic Imperative: New Policies for American Security* (Cambridge: Ballinger, 1982).

Doubtless such considerations played a role in the Services' costing of the strategy: to avoid problems of diversion, one buys *much larger forces*.²⁶ But now that the Administration has essentially admitted that the forces necessary to hedge against the diversion problem are too expensive, retention of the strategy may be too risky.

Some, of course, argue just the reverse, that "because the development and acquisition of new weapons might be delayed, *more* emphasis would be placed on such flexible tactics as 'geographical escalation'" (emphasis mine).²⁷ Admittedly, geographical escalation conjures up attractive images of "regain[ing] the initiative," "turning the tables," and "making the Russians play by our rules." But this ought to suggest a further problem; namely, what if the Russians *do* decide to "play by our rules," and proceed to "counter-horizontal escalate" themselves?

The Problem of Counter-Horizontal Escalation

Although the possibility was recognized by some Westerners at the time,²⁸ Khrushchev did not play "the Berlin card" in the Cuban missile crisis of 1962. Faced with an American "war-widening" move against Cuba, his successors might behave rather differently. One might imagine the following scenario: the Soviets invade Iran; American forces "hit" Cuba (or the Soviet brigade there); the Soviets "hit" West Berlin (or the U.S. brigade there). Then what? You got him to "play by your rules"; are you better off?

Is Cuba more valuable to the Soviets than West Berlin is to the Federal Republic? Would European leaderships dutifully "fall in" behind further American "initiatives" at that point?

Even assuming that the Soviets could attack the Berlin brigade "surgically," without killing West German citizens (the legal status of all West Berliners), would the U.S. allow it to be decimated without further response? If West Berlin had been sealed off, then at some point the brigade's survival might require airlift. Would the Soviets allow another Berlin airlift, or would they shoot down Western transports this time? Perhaps the airlift would "fight

26. This is just the "flip side" of the Soviet solution discussed above. To avoid dangerous diversions (in the Soviet case, forced; in the U.S. case, self-imposed), build.

27. Richard Halloran, "Reagan Aides See Pressure to Cut 1984 Military Budget," *The New York Times*, July 13, 1982, p. 1.

28. Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York: Praeger, 1965), pp. 86-87.

its way in," suppressing East German air defenses at a time of great tension and high military alert.

Whether or not one finds this particular scenario to be plausible, the point is that forcing the Soviets to "play by these rules" may not be in America's interest; move and counter-move might quickly bring both sides to unforeseen and very unstable situations. And reversing the spiral might be exceedingly difficult.

Diplomacy and Military Premises

Not only crisis management but peacetime diplomacy as well may be compromised by a policy of horizontal escalation. The Soviets, Secretary Weinberger states, "can coerce by threatening—implicitly or explicitly—to apply military force."²⁹ But, might not a strategy of horizontal escalation, predicated on the assumption that direct defense is infeasible, facilitate that coercion?

In the Persian Gulf, one can only render Soviet threats the *more* credible, their local audiences the *more* compliant, by suggesting that direct conventional defense is unmanageable, "given the Soviets' inherent geographical advantages in the Persian Gulf region and their superior number of available ground forces."³⁰

This, moreover, is a simplistic and misleading characterization of the Soviet-American conventional balance in the region. Geographical proximity does not per se constitute Soviet military access, and static prewar "bean-counting" cannot reflect dynamic wartime effectiveness. The latter always depends on operational factors such as terrain, available avenues of advance (and their vulnerability), logistics, coordination, reconnaissance, flexibility, leadership, morale, combat technology, and troop skill. That fact is consistently bemoaned on the U.S. side, but is virtually neglected when assessing the Soviet threat. When such factors are accounted for on *both* sides, in a balanced and systematic way, the prevalent assessment is seen to be overly pessimistic.³¹

29. FY 83 Posture Statement, p. 1-10.

30. Wilson, "U.S. May Hit Soviet Outposts," p. 1.

31. For an operational assessment of the U.S.-Soviet conventional balance in the Persian Gulf, and a detailed argument that direct conventional defense is feasible, see Joshua M. Epstein, "Soviet Vulnerabilities in Iran and the RDF Deterrent," *International Security*, Vol. 6, No. 2 (Fall 1981), pp. 126-158. See also Dennis Ross, "Considering Soviet Threats to the Persian Gulf," *International Security*, Vol. 6, No. 2 (Fall 1981), pp. 159-180, and Keith A. Dunn, "Constraints on the USSR in Southwest Asia," *Orbis*, Vol. 25, No. 3 (Fall 1981), pp. 607-631.

Furthermore, while there are compelling reasons for the U.S. to avoid reliance on nuclear employment, the Soviets surely cannot ignore that possibility. And this, too, contributes to deterrence.

But does the attraction to horizontal escalation derive only from the unwarranted assumptions (a) that conventional defense is utterly infeasible and (b) that Soviet nuclear developments have stripped the U.S. strategic triad of deterrent value? Perhaps. But it often seems as though the true motivations run deeper—as though the advocates, at bottom, have turned away from the entire concept of limited war.³²

Winning

MacArthur said that, "in war, there is no substitute for victory." Neither, of course, is there any substitute for national survival. While at various points, the Reagan Administration seems to have unqualifiedly adopted MacArthur's heroic dictum, at other points its strategists seem to be aware of the unheroic fact of real life—"the difficulty that war invites the belligerents to regard the contest as mortal and to continue it until they are reduced to ruins."³³

Over a decade ago, in an essay called "Peace Through Escalation?", Fred Iklé, now Under Secretary of Defense for Policy, put the enduring dilemma this way:

If a nation can overwhelm all of the enemy's forces by escalating a war, the fighting will of course be brought to an end. . . . Short of inflicting such total defeat, successful escalation would have to induce the enemy government to accept the proffered peace terms. The trouble is, the greater the enemy's effort and costs in fighting a war, the more will he become committed to his own conditions for peace. Indeed, inflicting more damage on the enemy might cause him to stiffen his peace terms. . . . It is these opposed effects of escalation that make it so hard to plan for limited wars and to terminate them.³⁴

In order, as Secretary Weinberger desires, "to prevent the uncontrolled spread of hostilities,"³⁵ it is obviously critical that the Soviets never see an

32. In Secretary of the Navy John Lehman's view, the rapid growth of Soviet naval power has "eliminated the option of planning for a regionally limited naval war with the Soviet Union. It will be instantaneously a global naval conflict." Richard Halloran, "Reagan Selling Navy Budget as Heart of Military Mission," *The New York Times*, April 11, 1982.

33. William W. Kaufmann, "Limited Warfare," in William W. Kaufmann, ed., *Military Policy and National Security* (Princeton, N.J.: Princeton University Press, 1956), p. 112.

34. Iklé, *Every War Must End*, pp. 41-42.

35. FY 83 Posture Statement, p. III-101.

advantage in opening new theaters or geographically widening a local war themselves. In that sense, a strategy of limited war in fact does, and always has, required "horizontal" capabilities: "you will not succeed at the initial point of attack and we will not be drawn off by attacks elsewhere; you must fight here and you cannot win here, so stop; indeed, don't start."³⁶

While multi-theater capabilities sufficient to *deny* the Soviets a war-widening strategy are thus essential to channel and limit conventional conflict should deterrence fail, it is far from clear that an American policy of *initiating* such expansions would foster military control or wartime diplomacy. It might, but having reviewed the risks, Iklé's observation is worth recalling:

It is hard to say whether treason or adventurism has brought more nations to the graveyard of history. The record is muddled, because when adventurists have destroyed a nation they usually blamed "traitors" for the calamity.³⁷

Credibility

If a strategy is to deter aggression, that strategy must be *credible*. We and our potential adversaries must believe at least two things about it. First, both sides must believe that, were deterrence to fail, the United States would actually operate its forces in accord with the strategy. Second, both must believe that such operations would be likely to achieve American wartime goals.

Failure on the second count often results in failure on the first. For example, massive retaliation, America's first great experiment in asymmetrical response, failed on the second requirement. The American goal was to contain Soviet expansion at military costs acceptable to the United States. But the strategy suggested that the U.S. would run a high risk of unacceptable damage in response to even the most limited of Soviet encroachments. In the final analysis, not even the U.S. believed that it would operate its forces in such a way. And so, massive retaliation failed on the first count as well.³⁸

Horizontal escalation—the United States' most recent asymmetrical experiment—also fails to meet the basic requirements of credibility. It fails on the

36. For a fuller discussion, see Kaufmann, "Limited Warfare."

37. Iklé, *Every War Must End*, p. 62.

38. The seminal critique is Kaufmann's "The Requirements of Deterrence," in Kaufmann, ed., *Military Policy and National Security*.

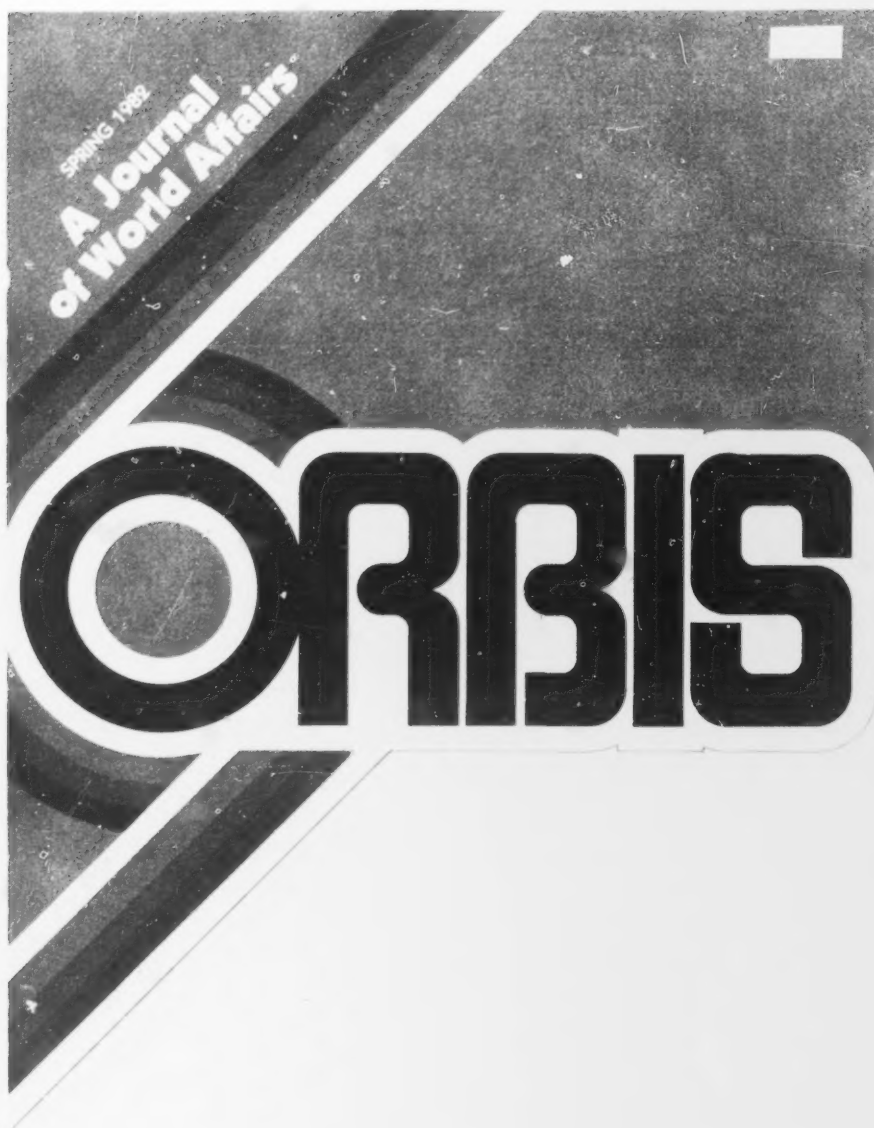
first count because it is not even clear what it would *mean* to operate American forces in accordance with the strategy: it is not clear what its targets would be or, more fundamentally, how one would go about determining them in wartime. Neither is it clear what military actions would be taken against the selected targets.

Horizontal escalation fails to meet the second requirement as well. It clearly runs daunting risks—of nuclear escalation and/or Soviet counter-horizontal attacks—but the goals of horizontal escalation remain cloudy, in both the broader strategic sense (ultimate victory vs. limitation) and in the narrow operational sense (punishment, hostage-taking, etc.).

"The threat that leaves something to chance" may be credible. But threats that leave everything to chance most assuredly are not.

Now, the Reagan Administration's early enthusiasm for the strategy seems to have cooled somewhat; it is certainly less vocal than it was. Logically, however, there are only two possibilities. Either horizontal escalation is the Administration's strategy or it isn't.

If it is, then the strategy is not credible. And if horizontal escalation is not the Administration's strategy, then *what is* the strategy? Given the economic costs allegedly required to support it, the American people surely deserve an answer.



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ON CONVENTIONAL DETERRENCE IN EUROPE: QUESTIONS OF SOVIET CONFIDENCE*

by Joshua M. Epstein

While the expansion and qualitative improvement of Soviet strategic and theater-nuclear capabilities have been unremitting, some feel that, since Khrushchev, the Soviets have come to accept the possibility of nonnuclear conflict between the superpowers. Whether or not they have abandoned Khrushchev's preoccupation with nuclear weaponry is unclear. That there has been some shift in priorities under Brezhnev there can be little doubt: at great expense, the Soviets have clearly committed themselves to securing a much wider range of nonnuclear options. And, equally clear, the NATO-Warsaw Pact conventional balance is central to defense planning on both sides of the iron curtain.

It vastly outweighs the nuclear competition in Soviet, as in American, spending. And, as a constraint on the global reallocation of force, it casts a shadow over regions far from the inter-German border, coloring diplomacy at virtually all points of political competition between East and West.

Regarding the critical European theater, one feature of Soviet conventional modernization stands out particularly—the trend toward a convergence of doctrine and capability. Mass, surprise, pre-emption, and the short war have long been recognized as among the pillars of Soviet theater doctrine; whatever its historical bases, and in spite of its many ambiguities, it is fair to say that the doctrine is offensive. What is disturbing, however, is that in the course of the Soviets' overall military build-up, their conventional forces have come more and more into line with that doctrine: they have assumed an increasingly offensive cast.

The ongoing modernization of Soviet armor, the introduction of a new infantry fighting vehicle (the BMP), and the greater mobility of divisional air defenses and artillery are often cited as enhancing offensive capabilities. This trend has been even more apparent in the modernization of Soviet tactical airpower, where the acquisition of a deep conven-

* Although the author bears sole responsibility for all views expressed here, he wishes to acknowledge the contributions of William W. Kaufmann, Richard K. Betts, Barry Posen, Joseph S. Nye, and Melissa Healy.

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tional counternuclear capability has received high priority in recent years. Formerly, Frontal Aviation was structured for air-defense interception, its operations tightly bound to those of the Red Army front (hence its name). Since the invasion of Czechoslovakia, Frontal Air's conventional missions have swung dramatically to deep offensive strikes. So clearly offensive has tactical air modernization been that many U.S. intelligence experts believe: "The initiation of nonnuclear hostilities by the Soviets *would unquestionably begin with a massive independent air operation against enemy nuclear forces, command posts and airfields [emphasis added]*."¹

The offensive trends of Soviet forces are unmistakable. And, in a period widely characterized as one of Western military decline and Soviet ascendancy, the latter's offensive theater doctrine and increasingly offensive forces are seen as harbingers of an ever-bolder, ever more confident, Soviet military.

But is the convergence of Soviet doctrine and capability—in the primacy of the offensive—a clear sign of confidence? Not judging by the accounts of the Soviet high command itself. Apparently unconvinced by the simple numerical comparisons and static assessments prevalent in the West, the Soviets themselves express profound dissatisfaction with many aspects of their forces, and with the drawbacks of ever-advancing technology—drawbacks as severe as in the ("gold-plated") American case. Indeed, seen in the light of the Soviets' own sharp self-criticism, the primacy of the offensive, in doctrine and capabilities, emerges as a rational accommodation to their most critical military shortcoming: inflexibility. Far from making the Soviets less dangerous, however, that very deficiency makes them, if anything, *more* dangerous by creating strong pre-emptive inclinations. And that fact has serious implications for NATO.

Before deriving them, two important qualifications are in order. First, any full assessment of the European conventional balance would discuss numbers; they are hardly mentioned here. Unlike inventories, the objects of this study (realism, initiative, decisionmaking, and the like) are hard to reach out and touch, hard to measure and harder still to evaluate in peacetime. Yet, on the scales of military fate, they have weighed at least as heavily as numbers. And until these factors are better appreciated, assessments of the Soviet threat can only be distorted and

¹ Phillip A. Peterson, *Soviet Air Power and the Pursuit of New Military Options* (Washington: U.S. Air Force, 1979), p. 7. These ground and air developments, combined, lead one to suspect Soviet interest in the following sort of attack in Europe: a crushing armored advance, with deep conventional air strikes to disrupt the mobilization of NATO's conventional defense and to deny NATO—through pre-emption of TNFs—the ability to stop the armored onslaught with its nuclear weapons. If that offensive were successful, the Soviets (without crossing the nuclear threshold themselves) would have raised the question of decoupling in a very stark way, quickly forcing upon the United States the dread choice between conventional defeat and strategic nuclear intervention. To impose that choice on one's opponent may be the only meaning "escalation dominance" can have in an age of strategic parity. To impose it conventionally would be elegant.

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incomplete. Second, the complexity of the topic and the confines of space simply preclude a full, parallel, analysis of Western deficiencies. While a number of them are noted, omissions are unavoidable. But those omissions—it must be stressed—are *not* meant to suggest that NATO has avoided all the Soviet problems to be reviewed. In short, the purpose of this article is not to conduct a net comparative assessment but to better equip those who would.

Flexibility and Incentives Against Realism

Flexibility is the capacity to change, to adjust, in the face of the unanticipated. That ability to respond quickly and effectively to unforeseen developments, to show decisiveness and initiative in a dynamic and uncertain combat environment, is regarded by the Soviets as a primary goal of training. In turn, the extent to which an exercise confronts commanders and troops with the unexpected is seen as the foremost index of its realism.

Yet the Soviets' incentive system, by the excessive concern with high grades that it produces, seems to have stymied the very creativity it was meant to foster. Under the so-called Socialist Competition, unit commanders and personnel are rewarded for consistent records of outstanding training. Among the rewards are a variety of honorific titles and medals, increased pay, extended leaves, promotions, and priority in the distribution of military goods and services, the last of which improves the chances of yet further rewards. Abuse of the competition consists in following only the "letter" of the prescribed mission, while denuding it of its more challenging features in order to boost readiness ratings. While anecdotes cannot substitute for statistics, complaints of abuse abound in the Soviets' own military literature, and there is reason to treat Soviet self-criticism as revealing:² far from being isolated occurrences, such complaints are persistent and pervasive, appearing with high frequency and for more than a decade in journals of each of the Soviets' insular service bureaucracies; they receive attention from the highest levels of Soviet military officialdom; and they are consistent with the findings of many public- and private-sector experts in the West. That the Soviets' own means often subvert their military ends is a proposition for which the Soviets themselves provide evidence.

Perhaps the most straightforward method by which the Soviets

² Obviously, Soviet military writing has exhortative functions as well. And, to some extent, it doubtless reflects that conservatism evident among militaries generally—the tendency to worry about, even to downplay, one's capabilities. Given those facts, and lacking hard data, Soviet commentary must be read with caution. Further discussion of the problems of judgment and interpretation may be found in Joshua M. Epstein, *Political Impediments to Military Effectiveness: The Case of Soviet Frontal Aviation*, MIT doctoral dissertation, 1980.

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attempt to ensure a modicum of realism in training is to conduct unit exercises in unfamiliar terrain. Yet General-Colonel Yakushin, chief of the main staff of the ground forces, writes that the intended effect is nullified by commanders and staffs who "seek —by all means possible—to familiarize their personnel with the new terrain in advance." According to Yakushin, "their ambition to get a good grade explains this." But he admonishes that "a grade acquired due to simplification and indulgence does not reflect the personnel's true level of preparedness and therefore cannot satisfy anyone."

"It is another matter entirely," writes the general, "when a subunit operates in unfamiliar territory, using a variant that they are not familiar with ahead of time."

Then, both commanders and soldiers have to fully use the knowledge and skills acquired during daily training; they must show initiative, quick thinking, creativity, decisiveness and other moral-combat qualities in a training battle. It is possible that someone will get a fairly low grade in such exercises. Yet the grade will mean much more than a good grade received under simplified conditions.³

The same concerns are shared by General-Lieutenant of Aviation Pavlov—"Hero of the Soviet Union and Honored Pilot of the USSR." "In training," he writes, "the pilots imitating the target fly only in a straight line, without changing altitude or speed."⁴ General-Colonel of Aviation Konstantinov derides the same oversimplified approach:

The officers in training were placed in a situation where they did not have to concern themselves with which targets to fire at first, what rate of fire to use, etc. They knew all this beforehand, including the "enemy's" action, the target's flight profile, their routes and other data.⁵

Predictably enough, when every action is planned in advance, commanders are at a loss when confronted with the unexpected. And while the Soviets are well aware that in modern combat the most unexpected situations are likely, their simulation of enemy tactics is, Konstantinov continues, "just too simplified and rigid." Precisely because of the need for flexibility, he adds, "This type of training is hardly beneficial."⁶ Or, as the hard-nosed Pavlov puts it, "without mincing words, these comrades would have a hard time under combat conditions."⁷ The same judgment is reached by U.S. analysts, who sense that Soviet oper-

³ General-Colonel Viktor Zakharovich Yakushin, "The Staff in the Struggle for an Effective Training Process," *Krasnaya zvezda*, April 20, 1977, p. 2 (August 1977). Here, and below, the parenthetical date corresponds to the English-language version appearing in *Soviet Press Selected Translations*, Directorate of Soviet Affairs, Air Force Intelligence Service.

⁴ General-Lieutenant Pavlov, "Inexhaustible Reserve," *Krasnaya zvezda*, August 4, 1976, p. 2 (April 1977).

⁵ General-Colonel Anatoliy Ustinovich Konstantinov, "Thorough Knowledge of Affairs," *Krasnaya zvezda*, March 13, 1977, p. 2 (June 1977).

⁶ *Ibid.*

⁷ Pavlov, "Inexhaustible Reserve."

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ational practices are "surprisingly 'pro forma'" with little continuing effort to enhance their skills under realistic conditions. Many of their "sorties" appear to be rather canned "'once around the flagpole and back.' In short, they appear to maintain their flying skills, but not their combat proficiency."⁸

Air-to-ground training appears to be shackled by the same sort of routinized unrealism. Yet, much to the frustration of General Pavlov in grading such unrealistic exercises: "people are assuming that the simulated enemy air defense system has been destroyed, but they have simply not thought the situation through. How can someone go into combat without the necessary skills?"⁹

Apparently, officials accountable for the simplification of combat training often seek refuge in the argument that it is justified by safety requirements. As highlighted by last summer's tragic accident aboard the U.S. carrier *Nimitz*, safety is an important issue. Not only is it important for reasons of morale and manpower, but it bears on the readiness of equipment as well. Particularly where, as in the Soviet case, maintenance skills lag behind new technology (see below), even minor accidents can result in weapons being out of action for considerable periods of time. And readiness of equipment is a Soviet goal of high priority.

The difficulty is that equipment readiness conflicts with a goal of equal priority where, in the interest of safety, realistic training is prohibited. Equipment damage may thereby be minimized, but so will combat skill. General Aleksandr Babayev, commander of the Sixteenth Air Army in East Germany, has resolved the conflict of goals. The inescapable fact, he boldly asserts, is that "in hothouse conditions, it is impossible to prepare real air warriors."¹⁰

While the actual goals of safety and realism conflict, this in no way prevents the attainment of high grades in both flight safety and pilot skill. The Soviet solution? Prohibit complex aerial maneuvering (this mini-

⁸ Edward T. Timperlake and Steven Leveen, "A Methodology for Estimating Comparative Aircrew Proficiency," a report prepared for the Theater Forces Division, Office of Strategic Research, Central Intelligence Agency (Arlington, Va.: Analytic Sciences, 1981), pp. 7-25.

⁹ Pavlov, "Inexhaustible Reserve." The same question, of course, applies to the United States. Notwithstanding its own "simplifications and indulgences," cost growth has been the basic constraint on realistic training with sophisticated weapons. Advanced missile firings have been cases in point. In fiscal 1980, then-Secretary of Defense Brown reported that "at present . . . only half the operational Navy fighter crews, and no attack aircraft crews, fire a single missile as often as once per year." *Department of Defense, Annual Report of the Secretary of Defense, FY 1980*, p. 192. In its conversion of F-4 pilots to the advanced F-15, the Air Force reported that "some . . . pilots were able to fire one AIM-9 Side-winder Missile at a target drone, but only three (or roughly 105) were able to test-fire the Raytheon AIM-7F Sparrow, the F-15's primary missile." See "F-15 Deployment to Netherlands Nears," *Aviation Week & Space Technology*, February 6, 1978, p. 233. Finally, in the U.S. Army, "a practice round of the TOW anti-tank missile costs \$3,000. A gunner is lucky if he gets to fire one a year." "On-the-Ground Look at an Ailing Army," *U.S. News & World Report*, May 12, 1980. Simulators take up some of the slack in retaining skills. But there is no doubt that the United States has a serious problem here.

¹⁰ General-Colonel Aleksandr Ivanovich Babayev, "Flight and the Combat Maneuver," *Krasnaya zvezda*, December 23, 1976, p. 2 (April 1977).

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mizes accidents, ensuring high grades in flight safety) and simplify the simulated enemy to the point where no aerobatics are required to achieve high scores in air-to-air interception. While grades in both safety and interception are high, the net result is routinized training, low combat skill, and operational rigidity.¹¹

Flexibility and Reconnaissance

If flexibility resides in the capacity to respond with timely dexterity to the unexpected counter or fast-breaking opportunity, then reconnaissance—the means whereby such turns of events are detected—is certainly among its critical elements. While the Soviets are clearly committed to improving their theater reconnaissance capabilities, it is equally clear that the West retains the technological edge in that field. Even where the most sophisticated reconnaissance technology is available, moreover, it cannot be effective if the critical information it yields is not used. And, in the Soviet case, because of their routine training, the problem of use may prove to be far more intractable than that of technology.

For example, where a deviation from the predetermined plan is commanded on the basis of reconnaissance data, Soviet units, once in action, apparently find it difficult to make the shift. General-Major Nosov of the Soviet air force cites a characteristic case in which, after the formation had taken off, new aerial reconnaissance was received at command. On the basis of that information, the (ground-based) commanders decided that an in-flight targeting change was called for. Yet when the pilots "were commanded to switch targets while in flight, they could not make an accurate bombing approach on the designated targets; part of the force had to be wasted on an alternate target." Why? Because, the general continues, they had been "systematically trained to carry out attacks on targets which were *predetermined* at the airfield [emphasis added]." Why do Soviet commanders permit the over-simplification that breeds this rigidity? "The stress, they say, is on raising the class rating of flight personnel. . . . Therefore, tactics are neglected."¹²

¹¹ The point, here as elsewhere, is not that the Soviets' problems are necessarily unique. Every air force, for example, faces the tradeoff between flight safety and realism in training. While the Soviet Union may address such universal problems in a particularly inefficient way, the United States makes compromises as well. For instance, "Safety considerations preclude training with the complex F-111 in Central Europe in the bad weather for which it was specifically designed; the crews have to deploy to the Mediterranean where they simulate all-weather operations in clear weather." Benjamin F. Schemmer, "Pentagon, White House, and Congress Concerned over Tactical Aircraft Complexity and Readiness," *Armed Forces Journal*, May 1980, p. 29. For more on the Soviet conflict between safety and realism, see Basil Epatko, *Training Soviet Military Flight Personnel*, Defense Intelligence Agency Report DDB-1300-153-79, November 1979, as cited in Timperlake and Leveen, *A Methodology for Estimating Comparative Aircrew Proficiency*.

¹² General-Major L. Nosov, "Sudden Combat Task," *Krasnaya zvezda*, May 27, 1976, p. 2 (April 1977).

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In addition to the cases in which rigidity hampers the use of available reconnaissance, the Soviets record many cases in which tactical reconnaissance simply is not available. This has proved to be particularly detrimental to the coordination of ground operations with air strikes. Where artillery and aircraft are combined in the support of ground forces, Soviet officers regularly bemoan cases in which "the results of air strikes against the enemy were of no consequence to the gunners. Their rounds often struck the same areas that had just previously been worked from the air." Tellingly, they add, "the duplication did not stem from any desire to achieve the maximum possible suppression of the 'enemy,' but from uncoordinated decisions. . . . Was this fire required? With what density? It's difficult to say. We had no bomb damage assessment data available."¹³

Flexibility and the Plan

If war were perfectly predictable, reconnaissance and, in turn, flexibility would not be necessary. While some sort of war plan is obviously essential, the ability to adjust the plan is no less important. The Soviets are the first to recognize this. And yet, accounts like this appear:

During the exercise . . . *no thought was given to making any corrections to the plans.* The combined-arms commander never called for an air strike unless it had been envisioned beforehand [emphasis added].

The subunit was late with its approach to the assigned line. The defenders immediately took advantage of this, committing their tank reserve to the resultant breach. How vital it was to receive support from combat helicopters during these decisive minutes! However, neither the combined-arms commander nor the representative from supporting aviation called for the rotary-wing aircraft. *The plan did not call for this* [emphasis added].

On-call resources are usually employed to accomplish *unforeseen missions which arise suddenly.* The aviators had a group of fighter-bombers and a flight of combat helicopters on alert for takeoff at any moment. However, this was *not reflected in the plan*, and they never left the ground [emphasis added].¹⁴

Flexibility, Command, and Decisionmaking

The Soviets' system of command and control may underlie these deficiencies in flexibility and initiative, as former Secretary of Defense Harold Brown suggests. "Owing to certain aspects of Soviet heritage, their combat operations tend to be governed by specific rules.

¹³ Lieutenant-Colonel A. Zakharenko, "The Lessons of Coordination," *Krasnaya zvezda*, August 5, 1977, p. 1 (November 1977).

¹⁴ Various officers, as cited in *ibid.*

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Proper application of these rules requires centralized authority and detailed control over subordinate units, and it results in rigidity and stifling of initiative in the Western sense." Pointedly, he adds, "the inflexibility inherent in such a system, coupled with the tendency of seniors to distrust subordinates and to provide them with only minimum essential information on the evolving tactical situation, could have adverse consequences in the face of rapidly changing, often unpredictable battlefield situations, particularly if their means of control are disrupted by U.S. forces."¹⁵

Just how little information is provided lower-level officers is suggested by their complaints:

The planning documents upon which our coordination is built seemed to me to be incomplete. They only reflected the time that aviation approaches the forward edge. But we need to know its location and condition at any moment, its readiness to commit reserves, types of air strikes, and concomitant results. In other words, the plans must be more detailed and supplemented by new data as the battle develops.¹⁶

Another officer urges that "in determining the basic time indices for supporting aviation it is important to take the most insignificant features of the ground battle into consideration." Remarkably, these "insignificant features" include: "the size of the offensive front, depth of the defensive zone, duration and formation of the artillery support for the attack, the sequence of movement, deployment, and commitment of the second echelons and the reserves into battle, and many, many more items."¹⁷

Denied such data, should subunits be cut off from higher authorities, their effectiveness will hinge entirely on the lower-level creativity and initiative that, by all accounts, they so sorely lack. Even if the system's vertical channels of control are not disrupted in the face of concerted attacks (and jamming), its effectiveness in reacting to the unexpected depends critically on timely decisionmaking and staff work. That capacity, however, may prove to be as scarce as it is imperative, under the ever-increasing tempo of modern war.

That concern is expressed by General Pavlovskiy, deputy minister of defense and commander in chief of the Soviet ground forces. While stressing that "the commander must primarily learn to use his combat equipment in the dynamics of battle, in *swiftly changing situations*," the disgruntled minister complains that "sometimes, in a relatively calm and static situation, an officer is prudent and correctly assesses all factors when giving a subunit its task. But as soon as the troops begin moving, his former tactical-technical culture is not apparent in his deci-

¹⁵ Harold Brown, secretary of defense, Department of Defense, *Annual Report, Fiscal Year 1982* (Washington: GPO, 1981), pp. 74-75.

¹⁶ Zakharenko, "The Lessons of Coordination."

¹⁷ Major I. Gerasimenko, cited in *ibid.*

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sions; he is incapable of using his knowledge with the speed demanded by battle [emphasis added]."¹⁸

The fact that Soviet staff work continues to be conducted largely without benefit of advanced automatic data-processing equipment exacerbates the problem. Short on such technology, staffs have difficulty cutting away the peripheral battlefield reportage, processing the essential, and presenting it to the commander in a format that allows him to make a timely and informed choice from among his tactical alternatives.

The Soviets suggest, moreover, that numerical superiority may be a mixed blessing in this respect. The more units there are, the more information sources there are; that, naturally, tends to increase the information, and hence the volume of work, with which higher staffs must contend, overloading them, increasing the sluggishness of the entire process.¹⁹ Meanwhile, back at the front, the battlefield is changing, tactical opportunities are fleeting by, enemy counters are at hand. Finally, even if every step in the cumbersome hierarchical process goes right and orders to deviate from the plan come down in a timely fashion, execution, as we have seen, is generally degraded by the Soviets' routine and stylized training.

The problem cuts across all the services. Concerning the Soviet navy, a study for the U.S. Defense Nuclear Agency concludes that "despite the exhortations for initiative at the lower operational levels, the impression is gained that the whole system depends on everything going just as prescribed, that the loss of a communication link or a command echelon would be more than disruptive, perhaps even catastrophic."²⁰

In the Soviet air force, the continuing reliance on ground-based control of air operations results in the same brittle vulnerability. Under Soviet ground-controlled intercept (GCI), vectoring and other critical combat orders are transmitted to the pilot from stations on the ground. Soviet pilots gain little experience in autonomous operations and, as a consequence, could suffer severe disorientation if their link to ground-based authorities were broken. Moreover, the increased range and speed of new Soviet tactical aircraft, and their capacity to operate at lower altitudes than before, have compounded the problems inherent in the system. Specifically, in the course of certain missions, increased range and lower-altitude flight demand the transfer of control from one ground station to the next. And because of the pilots' dependence on the system,

¹⁸ General Ivan Grigor'yevich Pavlovskiy, "An Officer's Technical Culture," *Krasnaya zvezda*, February 5, 1977, p. 2.

¹⁹ See General-Colonel D. Grinkevich, "Command and Control in Response to Contemporary Requirements," *Voyennyy vestnik*, no. 4 (April 1976), pp. 47-51 (November 1977).

²⁰ R. O. Welander, J. J. Herzog, and F. D. Kennedy, Jr., *The Soviet Navy Declaratory Doctrine for Theater Nuclear Warfare*, a report prepared for the director of the Defense Nuclear Agency (McLean, Va.: The BDM Corporation, 1977), pp. 38-39.

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the transfer must be fluid and precise, to ensure the continuity of communications. If the "hand-off" of control is clumsy and one ground station "drops the baton," as it were, the reassertion of control, if possible at all, may require that the pilot increase altitude (increasing his vulnerability) or abort the mission altogether, and either option would negate the very performance advantages that the new aircraft possess.²¹

This GCI problem is only one example of the many costs associated with ever-advancing technology. Another cost of modernization is familiar to Americans: the problem of oversophistication, or "gold-plating," as it is known.

Sustaining Advanced Technology

Although the complexity of U.S. weapons has created very serious problems in areas of support, notably maintenance, there is little basis for the widespread assumption that Soviet modernization has somehow avoided them. While new Soviet systems may, by some measures, be "simpler" than those of the United States, that does not mean they are easier for the Soviets to maintain. Regardless of how much simpler they may be than their American counterparts, new Soviet systems are certainly more complex than their Soviet predecessors. Even on the assumption—itself open to question—that Soviet weapons designs progress more "incrementally" than do American designs, the Soviet support environment may be so much less efficient than the American in adjusting to technological change that even a more incremental advance in weapons technology multiplies to a more dramatic increase in Soviet maintenance problems, and, ultimately, to difficulties at least as severe as our own in sustaining advanced weaponry at high levels of performance.²²

Moreover, however difficult it is for Soviet combat personnel to accommodate tactical anomalies, it may be just as difficult for Soviet support personnel to handle mechanical ones—and for similar reasons. As one Soviet maintenance engineer put it:

One might well ask what kind of creativeness can be involved in servicing weapons and equipment where everything is described in pertinent documentation dealing with technical standards and the engineer may not deviate from a single point.²³

²¹ On the traditional strictness of ground control, see *Soviet Aerospace Handbook*, AF Pamphlet 200-21 (Washington: Department of the Air Force, May 1978), p. 45. Soviet problems in maintaining the integrity of the ground control data link as range increases are discussed in Colonel V. A. Uryzhnikov, "In a Complex Situation," *Krasnaya zvezda*, January 7, 1977 (April 1977).

²² For a detailed analysis of both the U.S. gold-plating problem ("oversophisticated" technology) and its Soviet dual ("undersophisticated" support environment), see Joshua M. Epstein, *Political Impediments to Military Effectiveness*.

²³ "Military Engineer and Equipment: Efficiency—A Demand of the Times" (unattributed), *Vestnik protivovozdushnoy oborony*, no. 4, 1978, pp. 68-71, trans. U.S. Army Foreign Science and Technology Center, U.S. Army Material Development and Readiness Command, 1979.

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Just as a predetermined war plan runs afoul on the unexpected counter, so the predetermined maintenance schedules—with their rigid sequences of tasks and strict time norms—shackle the repair of unexpected defects, those induced, not by rote and simplified peacetime operations, but by real and random wartime damage and stress. This, when compounded by the Soviets' improving, but historically weak,²⁴ logistics system, points to serious problems of combat sustainability.

The Question of Culture

In a sense, the Soviets' rigidity is understandable. The complexity (and cost) of new equipment and the declining quality of the manpower pool, when combined with the limited training time available, have left the Soviets little alternative but to prescribe everything down to the last detail. In that sense, rigidity is an unavoidable concomitant of military modernization.

But some, like General Pavel Kutakhov, marshal of aviation, are far less generous. His poignant remark—so apt in the military sphere—might well be taken as a critique of the Soviet system at large.

You see, our every good beginning at some time takes a turn, somehow the rational substance evaporates from it, and only the formal shell remains. This results from the fact that we make a living and creative task to fit a kind of procrustean bed and regulate everything without exception.²⁵

The problems of military effectiveness finally derive from this far deeper problem, a political problem whose solution would call for nothing short of fundamental changes in the Soviet system itself. There are a few who, like Kutakhov, recognize this fact, but who see the Soviet Union as flanked by enemies, its sovereignty and influence resting principally on its military capabilities; to them, it must seem particularly problematic that the Soviet state—by its very rigidity and all-pervasiveness—should operate to the detriment of its own defensive might, that its militarism should detract from its military capability. And yet it does.

The Offensive Imperative

None of this, however, makes the Soviets any less dangerous. The Soviets are the first to recognize the uncertainties of war—the fact that not everything can be foreseen. Flexibility, initiative, and the capacity for creative decisionmaking in the face of uncertainty are therefore quali-

²⁴ See, for instance, Leo Heiman, "Soviet Invasion Weaknesses," *Military Review*, August 1969, pp. 33, 43.

²⁵ Lieutenant-General P. Kutakhov and L. Fil'chenko, *Aviatsiya i kosmonavtika*, no. 11, 1962, p. 56, for instance, as cited in Andris Trapans, *Organizational Maintenance in the Soviet Air Force* (Santa Monica, Calif.: Rand, January 1965), p. 28.

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ties that they hold in the highest esteem. Modernization itself, by increasing the tempo of war and thus the rapidity with which uncertainty may arise, has, in the Soviet view, only increased their value. Yet for all their defense spending, the Soviets appear to be in very short supply of those qualities.

At each step in the process of flexibility, the Soviets report deficiencies: in the detection of unexpected developments; in the commanders' capacity for acute and timely decisionmaking on the basis of tactical intelligence; in the ability of subunits to execute ordered deviations from a rote and predetermined plan; in the capacity to sustain operations at high levels of performance.

These operational limitations create certain incentives. In particular, once convinced that war with NATO was unavoidable, the Soviets would have strong incentive to apply a maximum of force with as little warning as possible. To do otherwise would allow NATO to mobilize forces whose suppression might require of the Soviets a sustainability that they appear to lack. NATO would have more time in which to respond and greater force with which to respond. This would only increase the likelihood of NATO's taking measures unforeseen by the Soviets and, in turn, would substantially increase the risk that flexibility, initiative, and creative decisionmaking under uncertainty would become necessary.

As long as the Soviets lack flexibility, they will have every reason to avoid that necessity. The operation that minimizes the likelihood of its arising is precisely the "surprise" and "massive" attack suggested by Soviet doctrine.

A successful pre-emption nips uncertainty in the bud. It obviates the need for great flexibility by overwhelming the adversary before he can generate the unexpected counter, thus precluding any need to diverge from the predetermined plan or the routinized mission.²⁶ In turn, the Soviets know that sustained coordinated operations are a risky proposition for them and that, if they fail to subdue NATO at the outset, matters may quickly go downhill. Is it not reasonable that Soviet doctrine speaks a preference for "the short war"?

While recognizing the Soviets' great and increasing strength, Western analysts have failed to recognize that their offensive doctrine and offensive capabilities might nevertheless converge on a host of deficiencies. The Soviets are well aware of their problems. And, while exhorting their correction, they design forces around those shortcomings, and the Soviet offensive doctrine is eminently rational in their light.²⁷

²⁶ To the extent that all militaries share the Soviets' problems, they may share their pre-emptive inclinations. That pre-emption holds out the prospect of an uncertainty-minimizing control over one's tactical environment has long been among its attractions; that is one deep source of the instability inherent in any military competition.

²⁷ This is not intended to imply anything about the historical development of Soviet doctrine. That

QUESTIONS OF SOVIET CONFIDENCE

The Soviet Dilemma

But there is a fly in the pre-emptive ointment. Indeed, the Soviets' deep dilemma is that the very problems that make a crushing pre-emption so attractive also make it highly risky for the Soviets to attack without prior mobilization. Not knowing the exact criteria operative in the field evaluation of unit readiness—knowing, nonetheless, that it embodies certain distortions—the Soviets face uncertainty as to the actual readiness of their forces. And looking with justifiable suspicion on high grades (unit ratings), they may be loath to “unleash” their forces without first taking very careful stock; this may explain why, in the postwar period, the Soviets have preceded each of their major operations with a period of mobilization. “How ready are our forces?,” responsible Soviet officials must ask themselves. “Ready . . . not for Czechs or Afghans, but for the North Atlantic Treaty Organization, an alliance whose training and technology are, in the net, superior, and whose economies—far more efficient than our own—devote more to defense than the Warsaw Pact. Yes, in many areas, we do have numbers, but ‘how much is enough?’” Such questions ought to give the Soviets pause.

Of course, if the Soviets conceal that pause and mobilize deceptively, then they might “have their cake and eat it, too.” Deception would be the great equalizer between the conflicting demands for mass and surprise.

NATO's Risks and Opportunities

What are the implications for NATO? The admission of ignorance is the beginning of wisdom. And finally, NATO cannot know precisely when, in the Soviets' mobilization, they would launch their offensive; that choice is a prerogative of the aggressor. In the face of that uncertainty (among others), NATO must be flexible enough to cover adequately the spectrum of plausible threats.

While NATO cannot know what the Soviets regard as their “optimal” attack, the Soviets (if the preceding analysis is correct) may well define “optimality” as that which maximizes their probability of a decisive initial phase. Because of their problems, that is, the Soviets will have a great deal riding on their first—preplanned, packaged—“punch,” as it were. NATO cannot afford to develop a “glass jaw” at any given point in the mobilization race. Potential inadequacies of readiness, warning, and response are NATO's basic risks in that connection.

is a different, and complex, question. One might put the observation this way: If, presented with a list of the Soviets' apparent problems, one had to select (from a second list, of possible doctrines) a doctrine that would obviate the need for capabilities (for instance, decentralized initiative) that the Soviets lack, a very intelligent choice would be their own offensive doctrine.

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Failure to maintain NATO's deployed forces in sufficient readiness would clearly risk vulnerability to Soviet attacks of the short-mobilization variety.²⁸ Failure to obtain warning of partial or full Warsaw Pact mobilization would, in turn, allow the Soviets to build up an imposing edge over NATO's in-place forces. However, given the rigors and indicators of any large-scale Soviet mobilization (for example, troop movements), "chances are small that the Soviets could achieve absolute surprise."²⁹ While NATO's warning system requires improvement, in the case of such mobilized Soviet attacks, deception per se is not as problematic as what might be termed "virtual deception."

The Soviets, that is, might enjoy all the benefits of deception even if it fails in fact and NATO obtains warning of Soviet attack preparations. If NATO fails to use such warning, fails to convert it to military response, if the *political* decision to begin NATO's countermobilization is too sluggish, the result could be the equivalent of no warning at all.³⁰

Even if from a posture of high readiness, NATO were to penetrate Soviet deception, act on warning, and begin mobilization in a timely way, its defense could still crumble if it ran out of munitions (or other war reserve stocks) before its adversary did.

Greater attention to these basic priorities would reduce NATO's risks. But a robust deterrent must do more: it must communicate to the adversary that his own vulnerabilities will not enjoy sanctuary. And there are four measures NATO should take in exploiting the Soviet vulnerabilities reviewed above:

1. Disruption of the Soviets' rigid (conventional) command and control system would be one such measure. Given the extreme dependence of Soviet air and ground units upon that system, its disruption would seriously degrade their fighting effectiveness.³¹ NATO's air forces

²⁸ Common examples include unreinforced (or slightly reinforced) "bolts from the blue" and attacks from exercises or from pseudo- (or real) revolts in Eastern Europe. They might also be less premeditated, developing from crises in the bloc or in the USSR during which the Soviets feel themselves provoked. Their perceptions of provocation are hard to predict. An invasion of Poland in which the Soviets kept rolling west, while obviously a matter of serious concern, would probably not be a case in point, having already involved nontrivial mobilization on the Soviets' part.

²⁹ Richard K. Betts, *Surprise Attack: Lessons for Defense Planning* (Washington: Brookings, forthcoming), chap. 7.

³⁰ The deception problem, in fact, runs deeper still and can arise even if NATO does obtain warning, does convert warning into response, and "stays even" with the Warsaw Pact throughout its mobilization. Specifically, if by a feigned demobilization, the Soviets convinced NATO's political leadership that war had been averted, the Soviets (still poised in fact) could attack after NATO began dismantling its own mobilization. I am grateful to William Kaufmann for this insight. Israel's experience in 1973, if not strictly analogous, is sobering in this connection. For more on NATO's problems in responding to warning, see *ibid.*

³¹ While the conventional cruise missile may be a promising instrument against the system's fixed components, any judgment as to its cost-effectiveness would be premature. For the outstanding uncertainties and a review of potential applications, see John C. Baker, "Program Costs and Comparisons" and Roger H. Palin, "War in Europe: Nuclear and Conventional Options," in Richard K. Betts, ed., *Cruise Missiles: Technology, Strategy, Politics* (Washington: Brookings, 1981).

QUESTIONS OF SOVIET CONFIDENCE

should consider trading away a certain number of air-to-air and air-base attack sorties in favor of attacks on the Soviet GCI system. While physically destroying fewer Soviet aircraft, such attacks could render a far greater number ineffective.

2. To facilitate that plan, the European allies should provide U.S. tactical aircraft with far more shelters than are now available. These can deny pre-emptive air superiority to the Soviets and would allow the more secure reinforcement of NATO's air forces from the United States, enhancing sustainability. In that connection, while the Soviets have every reason to prefer a short war, it would be foolish to assume them incapable of a longer one; World War I seems unequivocal on that count. Sustainability is a necessary hedge against that very real possibility. Of course, should the Soviets prove reliant on a short war (that is, a decisive initial campaign), then the capacity first to deny it and then to outsustain them can only be the more disuasive.³²

3. On the ground, NATO should pose the credible threat of local counteroffensives.³³ Ironically, the Soviets' emphasis on surprise bespeaks an inability to handle surprises, an inability to react to the unexpected counter. NATO can exploit that vulnerability by forcing uncertainty on the Soviets, by creating surprise and confusion through local offensive feints and focused counterattacks.

4. Finally, NATO's confidence in all these approaches increases with the reinforcement time it has available. While politically sensitive, field fortification is a very promising avenue in that regard. While no fortifications are literally impregnable, they could buy NATO significantly more reinforcement time, bolstering its defense against pre-emption as well. The Mannerheim line bought the valiant Finns a great deal of time, while the United States has fortified the Korean line for years. It is purely a matter of military discipline and training whether or not the approach would "lull NATO into a false sense of security." Also, there is no reason to assume that fortifications would commit NATO to a brittle and static defense. On the contrary, by forcing the Soviets to concentrate more densely to achieve breakthroughs, fortifications can clarify battlefield intelligence; and since they could be manned by light troops

³² It also hedges against the risk "that the Soviet Union would draw on its forces in the Far East and Central Asia to launch a second attack on the western front before NATO could recuperate from the first attack, and deploy further reinforcements." Moreover, even were the Soviets to design for a decisive initial phase, their best attack might well proceed from a long mobilization (months) allowing selected Soviet forces from those areas to be applied earlier (even initially). Doubtless, they would sacrifice a degree of strategic surprise, but the resultant mass (perhaps more than 100 divisions) might be well worth that price. Those risks, among others, and proposals addressing them are set forth in William W. Kaufmann, *Defense in the 1980s* (Washington: Brookings, 1981).

³³ Local counteroffensives should be distinguished sharply from the vastly more demanding mission of pushing the entire front eastward. The latter is a full-scale offensive, while the counterattacks advocated here are a tactical supplement to forward defense.

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(perhaps German territorials), they can free heavier mechanized forces to exploit that intelligence, enhancing defensive elasticity while facilitating disruptive counteroffensives (or flanking maneuvers) in other sectors of the front.³⁴

While high readiness, warning, timely response, and adequate war reserve stocks would reduce Soviet confidence of an initial victory, these measures would subject the Soviets' primary weaknesses to sharply increasing strain as the war proceeded.³⁵ Certainly in the conventional sphere, deterrence is, and always has been, based on the communication of war-fighting capabilities. NATO's adoption of the proposals above, in enhancing and communicating the latter, can only strengthen the former.

Unfortunately, clarity on fundamental priorities does not ensure that the Western alliance will muster the clear-headedness or political will to secure the deterrent that is possible. Just as Soviet political malevolence should not be mistaken for military omnipotence, so the military feasibility of Western defense cannot alone ensure the political cohesiveness upon which a secure deterrent must rest. But to dissipate the military preparedness and political strength that would ensure deterrence, precisely out of an unbalanced assessment of the threat itself or in politically divisive struggles over matters of lower military priority³⁶—surely these would be among the worst mistakes imaginable.

³⁴ Forces thus freed could also bolster SACEUR's strategic reserve. Also, while this topic may conjure up images of a Maginot Line, symbolizing the political division of Germany, only a carefully arranged system of light field fortifications augmented by terrain modifications of various sorts is envisioned.

³⁵ Furthermore, in connection with sustainability, it would be advantageous if NATO's main line of communication approached perpendicularity to the front (i.e., through France) rather than parallelism, as is too nearly the case at present.

³⁶ An example is long-range theater-nuclear force modernization.

SCIENCE AND SPACE

MONDAY, FEBRUARY 27, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 10:35 a.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Grassley, Gorton, and Chiles.

Staff present: Stephen Bell, staff director; William Hoagland, deputy staff director and senior analyst for agriculture and physical resources group; and Warren Richeson, analyst for science and space.

For the minority: Richard N. Brandon, staff director; and Kenneth Erickson, senior analyst for science and technology.

Chairman DOMENICI. All right, we are going to get started. I understand Senator Chiles will be here before we finish and ask some questions. If he is not, we will put them in the record or ask them for him.

OPENING STATEMENT OF CHAIRMAN DOMENICI

Our first witness will be Dr. George Keyworth, the Director of the Office of Science and Technology. I am very pleased to have you here again, Dr. Keyworth. And it is my privilege to have all of the distinguished experts in their scientific areas, they are all very well qualified, to testify before this committee on matters pertaining to science, space, and technology.

As everyone knows, Dr. George Keyworth is the President's science adviser and Mr. James Beggs is the Administrator of NASA. Dr. John Gibbons is Director of the Congressional Office of Technology Assessment and Mr. William Carey is the executive officer for the American Association for the Advancement of Science.

The United States has long experienced world leadership in scientific achievements. Our discoveries and developments in electronics, communications, engineering, biogenetics, chemistry, and transportation have benefited people the world over.

I believe the majority of Americans recognize the fact that research eventually returns a profit to our national economy by way of increased productivity in jobs.

SCIENTIFIC DISCOVERIES RESPONSIBLE FOR HIGH STANDARD OF LIVING

The National Science Foundation conducted a public-opinion poll last year and found that 86 percent of the adults surveyed believe

scientific discoveries are chiefly responsible for our high standard of living in this country. Technological expertise leads a list of factors judged to contribute the most to U.S. influence in the world. It ranks ahead of our form of government, our economic system, our natural resources, our religious heritage, and our educational system. I am merely suggesting what the polls say. I am not saying that is the case. We do not want you to get that bigheaded.

Technology is being developed at an increasing pace and some fear that competition with other countries threatens our superiority in this area. More countries are recognizing technology development as essential to quality of life and are investing their resources more frequently and more quantities than they have in the past.

I think we are going to be able to compete in this environment. In fact, I think we must, we are going to have to have a vital R&D enterprise to assure future competitiveness of U.S. industry and at the same time assure a stable defense.

GROWING SUPPORT FOR TOTAL R&D EFFORT

From chart 1 we see growing support over the past 5 years for our total R&D effort. Between 1980 and 1984, total Federal R&D expenditures increased from \$37 billion to \$41 billion in 1982 dollars. However, most of this increase has been for defense-related R&D—the left-hand bars on the chart.

As we all know, Secretary Weinberger appeared here before this committee and most of us told him that the United States could not afford the entire defense increase requested by the President. We have to remember that the defense R&D is included within the defense budget request and may also need to be carefully examined. What I am suggesting is that the outyear R&D may not be available to the extent projected here on these—by these bar graphs and by the defense budget that the administration sent up.

DECLINING TREND IN REAL CIVILIAN R&D FUNDING

I am concerned that we are seeing a decline, in real terms, for the civilian R&D budget—the right-hand bars on this chart. The administration's policy of shifting support from development toward basic research is more evident in civilian R&D. Basic research is a good investment for continued growth of all areas of scientific knowledge. However, if a reduction in publicly funded applied research and development is not offset by increased support in the private sector, then our technology competition with other countries could indeed be weakened.

The declining trend for real civilian R&D funding is illustrated in chart 2. These projections are from CBO, based on the administration's civilian R&D spending proposals. The sharp decline for space R&D in 1982 was due to NASA moving most of the shuttle costs from R&D to Operations. The increase for space R&D from 1985 to 1989 is due to the proposed space station. However, even with this major new initiative the purchasing power for space R&D is projected to be less in 1989 than it was in 1980. Overall, however, real dollar support for civilian R&D in 1989 will be approximately three-fourths of what it was at the beginning of this decade. Scien-

tific programs not related to defense or space may be competing for a smaller portion of R&D budgets.

SPENDING FOR SPACE PROGRAMS EXPECTED TO INCREASE

Chart 3 shows that spending for space programs is expected to account for an increasing percentage of the civilian R&D budget under the President's science proposals by 1989. Other research efforts in transportation, agriculture, natural resources, and the environment would decline as a proportion of the total.

The fiscal year 1985 budget request reflects a 26-percent increase for defense R&D and 4 percent in civilian R&D. Total R&D spending in 1985 under the President's budget is approximately \$53 billion.

In the civilian R&D budget, increases in basic research will permit the National Science Foundation to strengthen the programs that train our scientists and improve our long-neglected university research instrumentation capability. The Department of Energy Science request emphasizes high energy physics and nuclear physics research programs.

Finally, NASA's budget for fiscal year 1985 reflects the President's state of the Union address last month, calling for the development of a permanently manned space station within this decade.

However, overall real increases for R&D funding are not projected for the outyears. This will require a closer assessment of our overall priorities in R&D. I recognize the concerns of some in the scientific community who fear intense competition for limited R&D funds when a major R&D program such as the space station is proposed. Discussion and debate are needed concerning our national goals and priorities for long-term investment in space, and indeed in all of the other science programs.

Basically, I have tried to give a background as we see it, not in terms of programs but sort of a macrolook at where it is.

Chart 1

REAL DEFENSE AND CIVILIAN R&D (In budget authority)

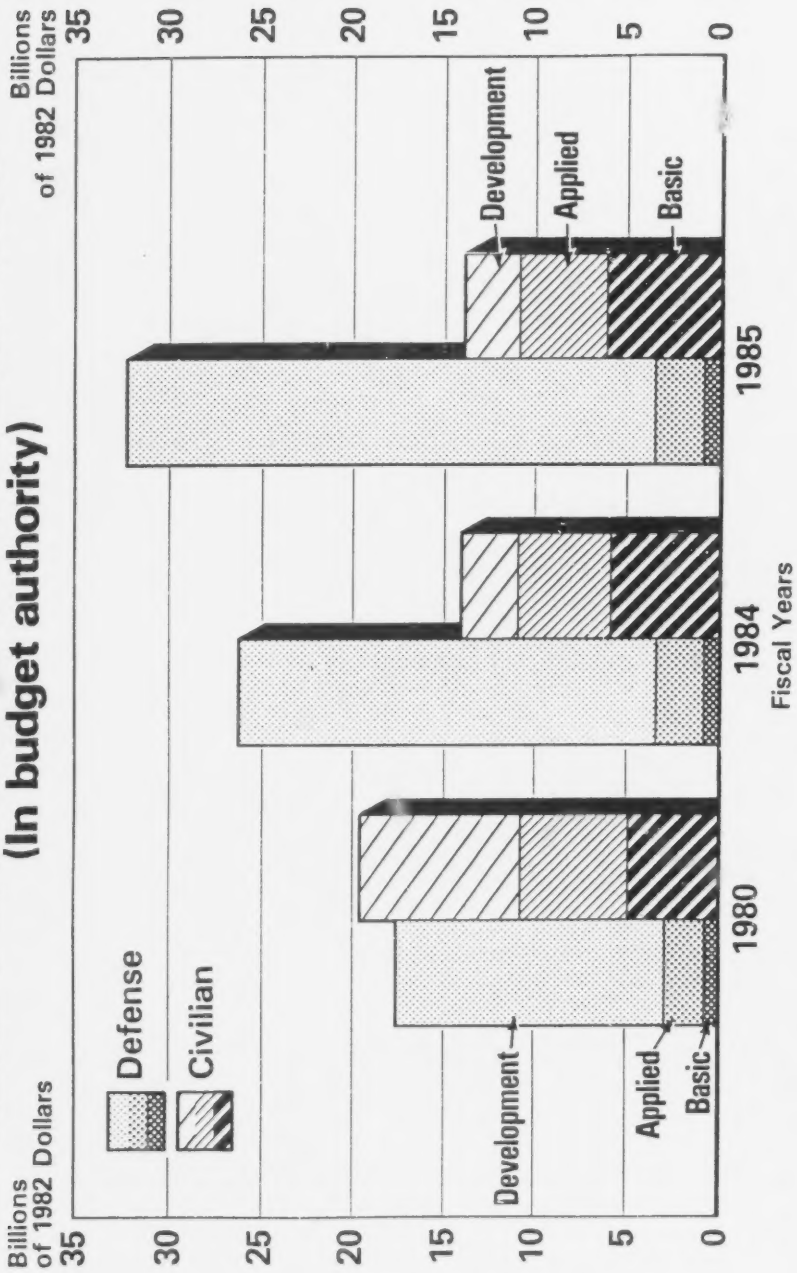


Chart 2

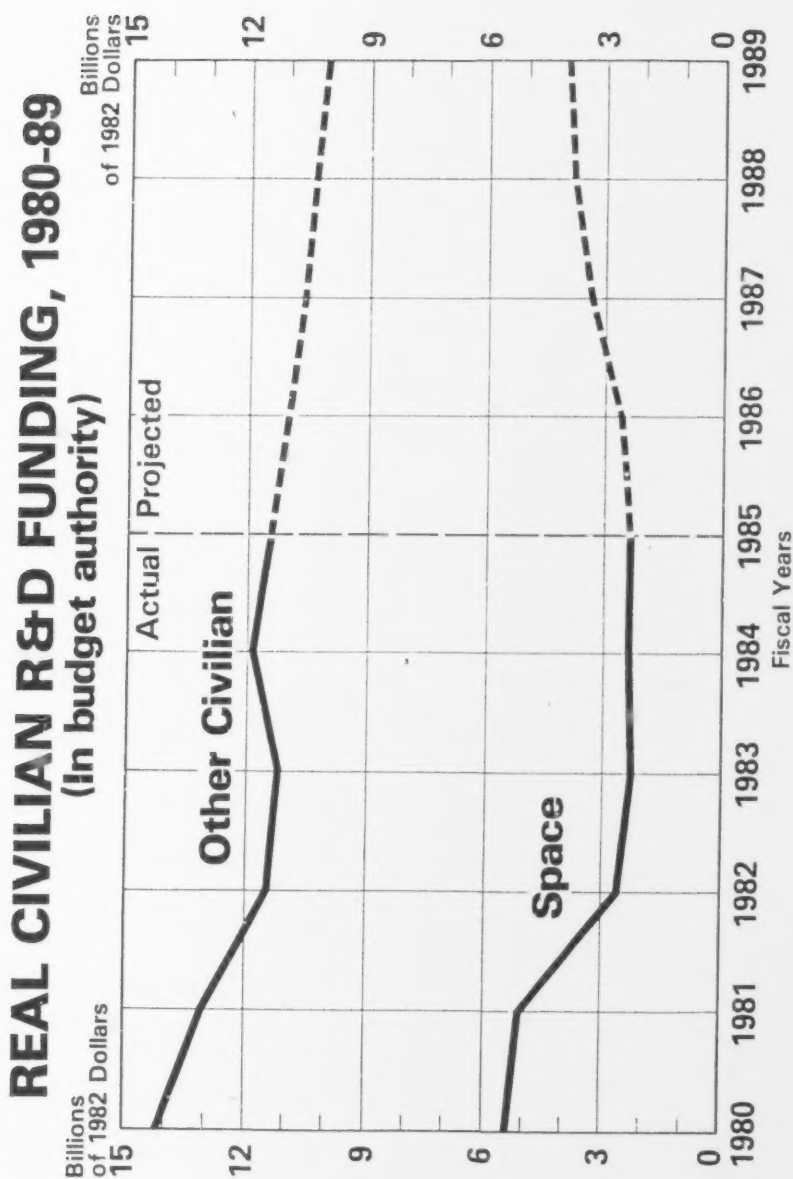
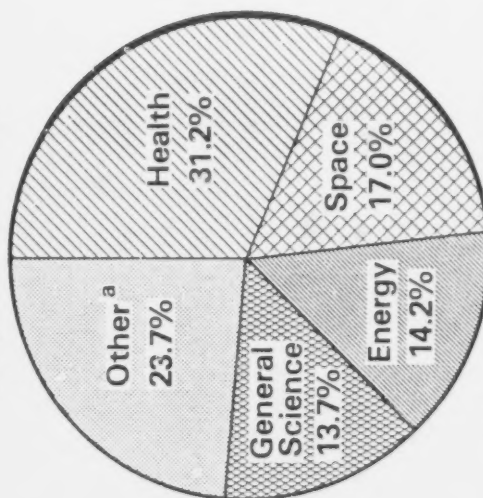


Chart 3

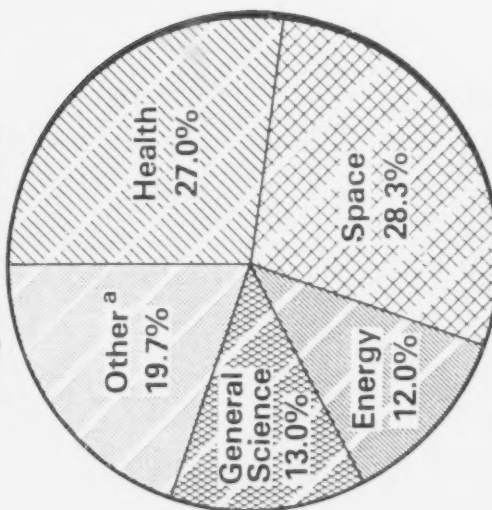
PERCENTAGE SHARES OF CIVILIAN R&D FUNDING

Requested 1985



Total = \$15.7 billion
(\$13.7 billion in 1982 dollars)

Projected 1989



Total = \$19 billion
(\$14 billion in 1982 dollars)

^a Includes transportation, agriculture, natural resources and environment, etc.

Chairman DOMENICI. With that, we will proceed with the witnesses. Dr. Keyworth, you proceed first. We have your testimony and it will be made a part of the record in its entirety.¹

I would appreciate it if you would summarize it as best as you could.

STATEMENT OF DR. G. A. KEYWORTH II, SCIENCE ADVISER TO THE PRESIDENT AND DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY POLICY, EXECUTIVE OFFICE OF THE PRESIDENT

Dr. KEYWORTH. Thank you, Mr. Chairman. I am pleased to have this opportunity to meet with you to discuss the administration's science policy and its relation to the programs proposed for fiscal year 1985.

This year's budget is the fourth one that the Reagan administration has prepared from scratch and sent to Congress. We are presenting a strong program of research and development for the coming year, one that continues to strengthen the Nation's capacity to conduct R&D and train new scientists and engineers, and one that permits important new projects to start.

CUMULATIVE IMPACT OF R&D POLICY

To begin, I want to take a few minutes to assess the cumulative impact of R&D policy during the Reagan administration's first 4 years.

With your permission, I would like to refer to the three charts that are attached as the last pages of my prepared text. All these charts refer to nondefense R&D, which is the area of the budget that I want to concentrate on today.

The first chart I will refer to is titled "Federal R&D Obligations."² Our science policy has been committed to an emphasis on basic research and a concomitant reduction of Government support for demonstration, development, and applied research projects that are more appropriate for the private sector. So when we look at the three categories of Federal funding in nondefense areas—basic research, applied research, and development—we see a startling shift in relative priorities during this administration. Please note that this and other charts show constant 1983 dollars. You can see how basic research has gone from the smallest fraction of nondefense R&D to the largest. At the same time, development funding has dropped by nearly 50 percent.

To see more specifically how that Federal support for basic research has grown, we turn to the chart titled "Basic Research Obligations."³ It shows basic research for the five largest R&D funding agencies since 1978—again, in constant dollars. As you can see, all five agencies have had strong and consistent growth, and in four of those cases that growth follows level or even declining real budgets in the 5 years before.

Finally, on the chart titled "Basic Research Obligations to Universities and Colleges"⁴ we see the growth in basic research funds

¹ See p. 430.

² See p. 453.

³ See p. 454.

⁴ See p. 455.

that have gone specifically to universities and colleges. Although it is not shown, we could trace a consistent decline in basic research funding for universities back to 1968, and where the chart picks up we see that there was essentially no growth from 1979 to 1981. However, from 1981 to the level being proposed for 1985, this support for universities grows by 26 percent—again, in real terms.

HIGHLIGHTS OF PRESIDENT'S PROPOSED FISCAL YEAR 1985 R&D BUDGET

Now, with that as prelude, let me briefly discuss some of the highlights of the President's proposed fiscal year 1985 R&D budget. Total Federal R&D obligations will increase in 1985 to \$53 billion, an increase of 14 percent over 1984. Over the 4 years of the Reagan administration Federal funds for R&D have increased by 52 percent. The largest increase in 1985 will go for defense R&D, which grows by 22 percent and will support continuing defense modernization.

Basic research is targeted for the next-largest increase, 10 percent, and will rise to \$7.9 billion in 1985. Since 1981, Federal support across all agencies for basic research has increased by 55 percent, with more than half of that support going directly to universities.

HIGH-ENERGY PHYSICS

Mr. Chairman, I know of the committee's particular interest in several science policy issues, so let me proceed directly to them. The first concerns high-energy physics and the possibility of developing a large, new particle accelerator. This is a field of science in which the United States has been a world leader and also a field that demands extremely careful—not to mention wise—decisions about future programs.

In a sense, high energy, or particle physics, is a field of science that pushes hardest at the frontiers of knowledge. The questions it asks are in many ways the most fundamental in nature, and the answers are surely among the hardest to find. Over the years there have been important direct applications to other areas of science and technology of knowledge first derived from this kind of front-line physics research.

But what I think we have to realize is that fields like this are important as much for the way they attract and stimulate human intellect as for their specific results. In a sense, fields like particle physics, or astrophysics, or molecular biology, or mathematics are stimuli for our broad national strength in science and technology.

Of those fields, particle physics is no doubt the most expensive to pursue today. It is that expense that forces us to make, as I said, wise decisions about what course we will pursue. It was that expense that led to a fundamental rethinking by the high-energy physics community, last year, of where the United States should be going in particle physics. The result of that introspection was the decision to terminate a major accelerator project that was no longer timely. Instead, the community is now focusing its attention on an entirely new accelerator that would let us take a bold step into new energy regimes. Such a step would permit us to look at truly forefront questions in the structure of matter.

I believe such a project has strong merit if it can be designed, if it can be built for a reasonable cost, and if it can be built in a reasonable timeframe. Those are big ifs, and I do not think anyone can tell us if we can meet those requirements. But we are proposing that in fiscal year 1985 we begin the process of trying to find out. To that end the Department of Energy will begin R&D on advanced superconducting particle accelerator concepts. This would permit us, at some point later in this decade, to decide whether or not to proceed with the next-generation machine, a superconducting supercollider.

Questions of how, where, and how much, and, perhaps, with whom, are all deferred until we have a better handle on the technology.

I emphasize that we propose no commitment to proceeding beyond this R&D; construction, should it appear feasible, will have to be decided later.

BEGIN WORK ON DEFINING AND BUILDING A SPACE STATION

My last topic is the President's proposal that the United States begin work on defining and building a space station. I would characterize this decision as recognition that we are going to occupy and use space on a larger scale than ever before. We will be simultaneously enlarging our ability to explore space and enlarging the Nation's long-term options for creating a new base for industrial activity. It is clear that this activity demands broad participation by the private sector to identify the highest priority industrial opportunities and to bring industry's expertise to planning systems to be tested and used in space.

At the same time we are committed to maintaining the momentum we have built up in our very successful programs of research in the space sciences. When we look at the new commitments in space sciences for fiscal year 1985, we see such major new programs as the upper atmosphere research satellite, the Mars climatology/geoscience orbiter, the naval remote ocean sensing satellite joining those already under way, such as the space telescope, the gamma ray observatory, the Galileo Jupiter probe, the Venus radar mapper, and a variety of Spacelab science programs. I believe we are embarked on an incredibly promising—and balanced—space science program, one that will not be compromised by the manned space efforts but that will, in fact, complement it. I think we are all well aware of the lesson of the impact of the Shuttle on space sciences in the 1970's—and we are not about to see that happen again.

Mr. Chairman, this concludes my summary. I would be happy to respond to questions from the committee.

Chairman DOMENICI. Thank you, Dr. Keyworth.

[The prepared statement of Dr. Keyworth follows:]

PROPOSED TESTIMONY OF DR. G. A. KEYWORTH, II
SCIENCE ADVISOR TO THE PRESIDENT AND
DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY POLICY
EXECUTIVE OFFICE OF THE PRESIDENT

COMMITTEE ON THE BUDGET
UNITED STATES SENATE

HEARINGS ON THE ADMINISTRATION SCIENCE BUDGET

FEBRUARY 27, 1984

CHAIRMAN DOMENICI AND MEMBERS OF THE COMMITTEE:

I'M PLEASED TO HAVE THIS OPPORTUNITY TO MEET WITH YOU TO DISCUSS THE ADMINISTRATION'S SCIENCE POLICY AND ITS RELATION TO THE PROGRAMS PROPOSED FOR FISCAL YEAR 1985. I HOPE MY PRESENTATION AND OUR DISCUSSION TODAY WILL MAKE TWO THINGS CLEAR. ONE IS OUR CONSISTENCY IN APPLYING THOSE BASIC PRINCIPLES OF SCIENCE POLICY THAT WERE ENUNCIATED AT THE START OF THE ADMINISTRATION. THE OTHER IS OUR CONTINUING SUCCESS--THE ADMINISTRATION'S AND THE CONGRESS'S--IN STRENGTHENING AMERICAN SCIENCE AND TECHNOLOGY TO RESPOND TO THE RAPIDLY CHANGING WORLD IN WHICH WE LIVE.

BY THEIR NATURE, SCIENCE AND TECHNOLOGY DEMAND LONG-TERM PLANNING AND PREPARATION, STARTING EARLY IN THE EDUCATIONAL PROCESS AND EXTENDING INTO THE MATURING OF YOUNG RESEARCHERS AND THEIR INTEGRATION INTO THE RESEARCH

ACADEMIC, OR INDUSTRIAL COMMUNITIES. MAJOR FACILITIES MAY TAKE A DECADE TO DEVELOP AND MAY BE USED FOR DECADES MORE. IT'S CLEAR THAT THE PLANNING CYCLES FOR THE WORLD OF SCIENCE AND TECHNOLOGY ARE FAR LONGER THAN THE TURNAROUND TIMES IN THE POLITICAL ARENA. SO THOSE OF US WHO ACCEPT THE RESPONSIBILITY FOR CHARTING THE COURSE FOR GOVERNMENT PROGRAMS IN SCIENCE AND TECHNOLOGY MUST ALSO ACCEPT THE RESPONSIBILITY FOR CLEARLY ARTICULATING--AND STICKING TO--BASIC PRINCIPLES FOR GUIDANCE.

IN DISCUSSING THE ADMINISTRATION'S SCIENCE POLICY AND THE PROPOSED FISCAL YEAR 1985 R&D BUDGET TODAY, I PROPOSE TO FOCUS ON THOSE SAME THREE PRINCIPLES THAT HAVE UNDERLAIN OUR PROGRAMS ALL ALONG. OUR THREE GOALS FOR SCIENCE POLICY ARE THESE: FIRST, THE DEVELOPMENT OF THE HIGHEST QUALITY TECHNICAL TALENT WE CAN PRODUCE; SECOND, THE CONTINUING PURSUIT OF EXCELLENCE IN WHATEVER RESEARCH WE CHOOSE TO DO; AND THIRD, THE EXPANSION AND STRENGTHENING OF PARTNERSHIPS BETWEEN GOVERNMENT, INDUSTRY, AND UNIVERSITIES FOR THE PURPOSE OF BRINGING THE BENEFITS OF NEW KNOWLEDGE AND ADVANCED TECHNOLOGY TO OUR NATION.

THOSE OF YOU WHO HAVE HEARD ME ON THE SUBJECT OF R&D POLICY KNOW HOW STRONGLY WE'VE STRESSED THE IMPORTANCE OF THE FEDERAL GOVERNMENT'S ROLE IN SUPPORT OF BASIC

RESEARCH. I'VE EVEN REFERRED TO THAT RESPONSIBILITY AS A FEDERAL TRUST. NOT ONLY IS BASIC RESEARCH AN ESSENTIAL INVESTMENT IN THE NATION'S LONG-TERM WELFARE, BUT IT'S LARGELY A FEDERAL RESPONSIBILITY BECAUSE ITS BENEFITS ARE SO BROADLY DISTRIBUTED. QUITE SIMPLY, BASIC RESEARCH IS A VITAL UNDERPINNING FOR OUR NATIONAL WELL-BEING. THERE ARE THREE REASONS FOR THAT.

FIRST, RESEARCH GRANTS TO UNIVERSITIES, WHERE THE MAJORITY OF THE BASIC RESEARCH IS DONE, PERMIT THE TRAINING OF TENS OF THOUSANDS OF GRADUATE STUDENTS UNDER SOME OF THE MOST DEMANDING AND STIMULATING RESEARCH CONDITIONS ANYWHERE. THIS NEW TALENT WILL BE RESPONSIBLE FOR MAINTAINING AMERICAN TECHNOLOGICAL LEADERSHIP IN COMING YEARS.

SECOND, STRONG SUPPORT FOR BASIC RESEARCH PERMITS U.S. SCIENTISTS AND ENGINEERS TO CHALLENGE INTELLECTUAL FRONTIERS IN THE MOST IMPORTANT FIELDS OF SCIENCE AND TECHNOLOGY. THAT PROVIDES THE NEW KNOWLEDGE THAT DRIVES OUR ECONOMIC GROWTH, IMPROVES OUR QUALITY OF LIFE, AND UNDERLIES OUR NATIONAL DEFENSE.

AND THIRD, WELL CHOSEN BASIC RESEARCH PROJECTS STIMULATE PRODUCTIVE PARTNERSHIPS BETWEEN SCIENTISTS AND ENGINEERS IN ALL SECTORS OF SOCIETY--PARTNERSHIPS

THAT ARE INCREASINGLY VITAL TO DEVELOPMENT OF NEW TECHNOLOGIES THAT WILL KEEP AMERICAN INDUSTRY COMPETITIVE WITH IMPROVING FOREIGN COMPANIES AND WILL SPEED THE APPLICATION OF NEW KNOWLEDGE TO OUR INCREASINGLY TECHNOLOGICAL DEFENSE NEEDS.

THIS YEAR'S BUDGET IS THE FOURTH ONE THAT THE REAGAN ADMINISTRATION HAS PREPARED FROM SCRATCH AND SENT TO CONGRESS. WE'RE PRESENTING A STRONG PROGRAM OF RESEARCH AND DEVELOPMENT FOR THE COMING YEAR, ONE THAT CONTINUES TO STRENGTHEN THE NATION'S CAPACITY TO CONDUCT R&D AND TRAIN NEW SCIENTISTS AND ENGINEERS, AND ONE THAT PERMITS IMPORTANT NEW PROJECTS TO START. BUT BEFORE DISCUSSING HOW OUR FY 1985 PROGRAMS MEET THOSE OBJECTIVES, I WANT TO TAKE A FEW MINUTES TO ASSESS THE CUMULATIVE IMPACT OF R&D POLICY DURING THE REAGAN ADMINISTRATION'S FIRST FOUR YEARS.

WITH YOUR PERMISSION, I'D LIKE TO REFER TO THE THREE CHARTS THAT ARE ATTACHED AS THE LAST PAGES OF MY PREPARED TEXT. ALL THESE CHARTS REFER TO NON-DEFENSE R&D, WHICH IS THE AREA OF THE BUDGET THAT I WANT TO CONCENTRATE ON TODAY.

THE FIRST CHART I'LL REFER TO IS TITLED "FEDERAL R&D OBLIGATIONS." OVER THESE FOUR YEARS THE ADMINISTRATION'S SCIENCE POLICY HAS BEEN COMMITTED TO AN EMPHASIS ON

BASIC RESEARCH, FOR THE REASONS I'VE JUST DESCRIBED, AND A CONCOMITANT REDUCTION OF GOVERNMENT SUPPORT FOR DEMONSTRATION, DEVELOPMENT, AND APPLIED RESEARCH PROJECTS THAT ARE MORE APPROPRIATE FOR THE PRIVATE SECTOR. IN PARTICULAR, WE MADE SUBSTANTIAL REDUCTIONS IN ENERGY-RELATED DEMONSTRATION PROJECTS. THIS IS A REFLECTION OF BOTH COMMON SENSE AND ECONOMIC REALITY. SO WHEN WE LOOK AT THE THREE CATEGORIES OF FEDERAL FUNDING IN NON-DEFENSE AREAS--BASIC RESEARCH, APPLIED RESEARCH, AND DEVELOPMENT--WE SEE A STARTLING SHIFT IN RELATIVE PRIORITIES DURING THIS ADMINISTRATION. PLEASE NOTE THAT THIS AND THE OTHER CHARTS SHOW CONSTANT 1983 DOLLARS, WHICH MEANS THE CURVES HAVE BEEN CORRECTED FOR INFLATION AND REPRESENT ACTUAL PURCHASING POWER. YOU CAN SEE HOW BASIC RESEARCH HAS GONE FROM THE SMALLEST FRACTION OF THAT NON-DEFENSE R&D TO THE LARGEST, WITH A JUMP IN SHARE FROM 27 TO 38 PERCENT--MORE THAN A 40-PERCENT INCREASE. AT THE SAME TIME, DEVELOPMENT FUNDING HAS DROPPED BY NEARLY 50 PERCENT.

TO SEE MORE SPECIFICALLY HOW THAT FEDERAL SUPPORT FOR BASIC RESEARCH HAS GROWN, WE TURN TO THE CHART TITLED "BASIC RESEARCH OBLIGATIONS." IT SHOWS BASIC RESEARCH FOR THE FIVE LARGEST R&D FUNDING AGENCIES SINCE 1978--AGAIN, IN CONSTANT DOLLARS. AS YOU CAN SEE, ALL FIVE AGENCIES HAVE HAD STRONG AND CONSISTENT

GROWTH, AND IN FOUR OF THOSE CASES THAT GROWTH FOLLOWS LEVEL OR EVEN DECLINING REAL BUDGETS IN THE FIVE YEARS BEFORE.

FINALLY, ON THE CHART TITLED "BASIC RESEARCH OBLIGATIONS TO UNIVERSITIES AND COLLEGES" WE CAN SEE THE GROWTH IN BASIC RESEARCH FUNDS THAT HAVE GONE SPECIFICALLY TO UNIVERSITIES AND COLLEGES. HERE THE RESULT OF THE SCIENCE POLICY IS EVEN MORE PRONOUNCED. ALTHOUGH IT'S NOT SHOWN, WE COULD TRACE A CONSISTENT DECLINE IN BASIC RESEARCH FUNDING FOR UNIVERSITIES BACK TO 1968, AND WHERE THE CHART PICKS UP WE SEE THAT THERE WAS ESSENTIALLY NO GROWTH FROM 1979 TO 1981. HOWEVER, FROM 1981 TO THE LEVEL BEING PROPOSED FOR 1985, THIS SUPPORT FOR UNIVERSITIES GROWS BY 26 PERCENT--AGAIN, IN REAL TERMS.

MOREOVER, THE TRUE IMPACTS OF FEDERAL FUNDING ON UNIVERSITIES ARE EVEN GREATER, BECAUSE SO MUCH UNIVERSITY RESEARCH DRAWS ON FEDERAL INVESTMENT IN UNIQUE CENTRALIZED FACILITIES. SUBSTANTIAL AMOUNTS OF THE FUNDING THAT GOES TO FEDERAL AND NATIONAL LABS ACTUALLY SUPPORT UNIVERSITY RESEARCH IN PHYSICS, ASTRONOMY, MATERIALS SCIENCES, AND SPACE SCIENCES. SO I WANT TO STRESS THAT THESE GRAPHS AND NUMBERS REFLECT A POINT I'VE BEEN MAKING FOR AS LONG AS I'VE BEEN IN WASHINGTON--THAT DURING

THIS PERIOD WE'VE BEEN SEEING THE STRONGEST SUPPORT FOR BASIC RESEARCH IN TWENTY YEARS.

I WANT TO CALL YOUR PARTICULAR ATTENTION TO THE CONSISTENCY SHOWN IN THESE TRENDS, BECAUSE, AS I MENTIONED EARLIER, ONE OF THE MOST SERIOUS DETRIMENTS TO GOOD SCIENCE IS WHAT IS CALLED ROLLER-COASTER FUNDING. MOST GOOD RESEARCH PROGRAMS REQUIRE MANY YEARS TO PLAN AND CARRY OUT, JUST AS IT REQUIRES MANY YEARS FOR NEW IDEAS AND, ESPECIALLY, NEW TALENT TO DEVELOP, MATURE, AND BECOME PRODUCTIVE. SO I SEE THIS CONSISTENCY AS A MAJOR ELEMENT OF SCIENCE POLICY, AN ELEMENT THAT I HOPE THE ADMINISTRATION, THE CONGRESS, THE SCIENCE COMMUNITY, AND THE PUBLIC WILL BE ABLE TO MAINTAIN IN COMING YEARS.

NOW, WITH THAT AS PRELUDE, LET ME BRIEFLY DISCUSS SOME OF THE HIGHLIGHTS OF THE PRESIDENT'S PROPOSED FISCAL YEAR 1985 R&D BUDGET.

TOTAL FEDERAL R&D WILL INCREASE IN 1985 TO \$55 BILLION. OVER THE FOUR YEARS OF THE REAGAN ADMINISTRATION FEDERAL FUNDS FOR R&D HAVE INCREASED BY 52 PERCENT, WITH THIS YEAR'S INCREASE BEING 14 PERCENT. THE LARGEST INCREASE IN 1985 WILL GO FOR DEFENSE R&D, WHICH INCREASES 22 PERCENT AND WILL SUPPORT CONTINUING DEFENSE MODERNIZATION.

WE'RE STILL IN THE POSITION OF HAVING TO PAY SPECIAL ATTENTION TO THESE DEFENSE MODERNIZATION NEEDS TO COMPENSATE FOR INADEQUATE FUNDING DURING THE PREVIOUS DECADE.

BASIC RESEARCH IS TARGETED FOR THE NEXT-LARGEST INCREASE, 10 PERCENT, AND WILL RISE TO \$7.9 BILLION IN 1985. SINCE 1981 FEDERAL SUPPORT ACROSS ALL AGENCIES FOR BASIC RESEARCH HAS INCREASED BY 55 PERCENT, A GROWTH OF NEARLY \$3 BILLION. HALF OF THAT SUPPORT GOES DIRECTLY TO UNIVERSITIES AND, AS I SAID, A GOOD BIT MORE IS DESTINED TO MAKE POSSIBLE FACULTY RESEARCH IN FEDERAL FACILITIES.

AS IN PREVIOUS YEARS, YOU'LL FIND WE'RE APPLYING THOSE BASIC RESEARCH INCREASES SELECTIVELY TO AREAS OF STRONG OPPORTUNITY AND EXCITEMENT. ALTHOUGH NOT READILY IDENTIFIED IN THE BUDGET INFORMATION, WE CONTINUE TO GIVE HIGH PRIORITY TO PROJECT SUPPORT FOR UNIVERSITY RESEARCH THROUGH AGENCIES LIKE NSF, NIH, DOE, DOD, AND NASA. THIS KIND OF SUPPORT IS THE MOST IMPORTANT ELEMENT OF THE BUDGET IN CONTINUING ON THE PATH TO RESTORING THE HEALTH AND VITALITY OF OUR NATION'S UNIVERSITIES.

I WOULD ALSO POINT OUT THAT WE RECOGNIZE THE IMPORTANT NEED WITHIN UNIVERSITIES TO IMPROVE AND UPDATE THE

FACILITIES AVAILABLE FOR RESEARCH. WE'VE ADOPTED A POLICY OF BUILDING SUPPORT IN LARGE PART FOR NEW INSTRUMENTATION AND EQUIPMENT DIRECTLY INTO THE PROJECT GRANTS. THAT'S A PRIMARY REASON WHY NSF, FOR EXAMPLE, IS USING ITS INCREASED FUNDS TO EMPHASIZE LARGER, NOT MORE GRANTS. IN ALL, WE EXPECT TO PROVIDE MORE THAN \$400 MILLION IN FISCAL YEAR 1985 FOR RESEARCH INSTRUMENTATION AVAILABLE FOR UNIVERSITY SCIENTISTS AND ENGINEERS.

WE RECOGNIZE THAT THIS AMOUNT, WHILE SUBSTANTIAL, FALLS FAR SHORT OF THE ESTIMATED NEEDS FOR NEW INSTRUMENTATION IN THE NATION'S UNIVERSITIES. AFTER ALL, THE PROBLEM AROSE OVER AN EXTENDED PERIOD OF UNDERINVESTMENT IN UNIVERSITY RESEARCH INSTRUMENTATION. AND I MUST EMPHASIZE THAT EVEN IF IT WERE POSSIBLE, IT WOULD BE FOOLISH TO THINK THIS IS A PROBLEM THAT COULD, OR SHOULD, BE SOLVED ALL AT ONCE WITH SOME KIND OF ONE-SHOT PROGRAM. KEEPING UP WITH NEW TECHNOLOGY MUST BE A CONTINUOUS PROCESS, AND WE INTEND TO PROVIDE THESE SUBSTANTIAL SUMS OF MONEY ON AN ON-GOING BASIS TO ADDRESS THIS PROBLEM. OUR PREFERENCE FOR INCLUDING MUCH OF THAT SUPPORT AS PART OF ACTUAL RESEARCH GRANTS RATHER THAN AS SEPARATE INSTRUMENTATION PROGRAMS IS TO EMPHASIZE THAT INSTRUMENTATION IS AS MUCH A PART OF MODERN RESEARCH AS ANY OTHER EXPENSE, TO PERMIT NEW INSTRUMENTATION TO BE TIED CLOSELY TO HIGHEST-PRIORITY RESEARCH PROGRAMS, AND

TO GIVE RESEARCHERS THEMSELVES AS MUCH DISCRETION AS POSSIBLE IN DECIDING HOW BEST TO ALLOCATE RESEARCH FUNDS.

I SAID EARLIER THAT THERE ARE THREE BROAD GOALS EMBODIED IN OUR PROGRAMS FOR SCIENCE AND TECHNOLOGY. THESE RELATE TO ASSURING THE CONTINUING SUPPLY OF BRIGHT NEW TECHNICAL TALENT TO MEET NATIONAL NEEDS, TO SELECTING THE MOST IMPORTANT AND MOST RELEVANT FIELDS OF R&D TO PURSUE AND THEN PURSUING THEM AS WELL AS WE POSSIBLY CAN, AND TO STIMULATING NEW AND PRODUCTIVE PARTNERSHIPS THAT SPAN THE RANGE OF PEOPLE AND ORGANIZATIONS CONDUCTING R&D.

TO HELP EXPLAIN THE KINDS OF SPECIFIC ACTIVITIES THAT WE'RE PROPOSING TO ACHIEVE THOSE GOALS, I WANT TO DESCRIBE JUST A FEW OF THE FY 1985 INITIATIVES IN THOSE CONTEXTS. EACH OF THESE EXAMPLES EMBODIES OUR DETERMINATION TO RETAIN U.S. SCIENTIFIC AND TECHNICAL LEADERSHIP IN THOSE FIELDS WE BELIEVE TO BE MOST IMPORTANT.

WITHOUT HESITATION I WOULD ASSIGN HIGHEST PRIORITY TO STIMULATING AND NURTURING TECHNICAL TALENT. OVER THE PAST SEVERAL YEARS I'VE HAD INTERACTIONS WITH HUNDREDS OF OUR NATION'S INDUSTRIAL AND UNIVERSITY LEADERS. ALMOST TO A PERSON THEY ECHO THAT PRIORITY. NOW, ESPECIALLY AS THE ECONOMY HAS RESUMED STRONG GROWTH,

INDUSTRIES THAT DEPEND ON TECHNICAL TALENT ARE FEELING THE PINCH. IN MANY OF THE FAST-GROWING FIELDS--THE ONES THAT CREATE NEW JOBS AND PRODUCTS FOR EXPORT--THERE SIMPLY AREN'T ENOUGH REALLY GOOD PEOPLE TO GO AROUND. WE FACE PROBLEMS OF BOTH NUMBERS AND QUALITY. WE FACE PROBLEMS THAT THREATEN TO PUT A BRAKE ON THE ABILITY OF OUR ECONOMY TO CONTINUE TO GROW.

AS YOU KNOW, ONE OF THE REALLY EXCITING PROGRAMS APPROVED FOR FY 1984 WAS THE NATIONAL SCIENCE FOUNDATION'S PRESIDENTIAL YOUNG INVESTIGATOR AWARDS. I'M PLEASED TO ANNOUNCE THAT THE FIRST 200 OF THESE AWARDS WERE ANNOUNCED LAST WEEK, AND NSF IS ALREADY GEARING UP FOR THE SECOND ROUND OF 200 TO BE MADE IN FY 1985. MY UNDERSTANDING, FROM DISCUSSIONS WITH INDUSTRY, IS THAT THE UNIVERSITIES INVOLVED ARE LIKELY TO BE VERY SUCCESSFUL IN LINING UP INDUSTRIAL SUPPORT TO MATCH THE FEDERAL FUNDS. WE EXPECT VIRTUALLY ALL THE AWARDEES TO REALIZE THE FULL \$100,000 PER YEAR RESEARCH SUPPORT POSSIBLE.

PART OF THE MOTIVATION FOR THIS PROGRAM IS TO ATTRACT AND RETAIN TOP-QUALITY YOUNG FACULTY IN UNIVERSITIES, ESPECIALLY IN THOSE FIELDS WHERE FACULTY SHORTAGES ARE SEVERELY LIMITING OUR ABILITY TO MEET THE GROWING DEMANDS BY STUDENTS FOR TRAINING. BUT, OVER THE PAST YEAR, IN CONVERSATIONS WITH THE ACADEMIC AND INDUSTRIAL

ENGINEERING COMMUNITY, WE'VE BECOME INCREASINGLY CONCERNED ABOUT ANOTHER PROBLEM--THE KIND OF TRAINING WE'RE PROVIDING FOR THE BULK OF THE UNDERGRADUATES--THOSE WHO EXPECT TO ENTER INDUSTRY.

WE'RE IN THE MIDST OF A REVOLUTION IN THE WAY ENGINEERS WORK AND THE WAY MODERN INDUSTRY OPERATES. THAT REVOLUTION IS SPURRED BY TODAY'S ALMOST UNRELIEVABLE LEAPS IN SCIENCE AND TECHNOLOGY--TECHNOLOGY THAT'S PUTTING POTENT NEW COMPUTER TOOLS IN THE HANDS OF THE PRODUCT DESIGNER AND THAT'S BLURRING THE DISTINCTIONS BETWEEN DISCIPLINES. SUCCESSFUL MANUFACTURERS ARE THOSE WHO UNDERSTAND THE ENTIRE PROCESS, FROM MARKETING TO DESIGN TO MANUFACTURING TO DISTRIBUTION--AND, INCREASINGLY, THE COMPUTER AND PEOPLE WHO KNOW HOW TO USE ITS FULL POTENTIAL ARE THE CENTRAL ELEMENTS IN THE PROCESS.

BUT VERY FEW OF OUR UNIVERSITIES ARE ABLE TO PREPARE THEIR STUDENTS TO OPERATE IN THAT KIND OF ENVIRONMENT. THIS ISN'T THEIR FAULT, BUT REFLECTS A COMBINATION OF LACK OF MODERN EQUIPMENT AND OVERRURDENEED FACULTY WHO ARE STRUGGLING JUST TO KEEP UP WITH TEACHING DEMANDS. BUT WE SEE SEVERAL HOPEFUL SIGNS THAT PROMISE TO HELP THEM OVERCOME THOSE LIMITATIONS.

IN PARTICULAR, INDUSTRY AND UNIVERSITIES ARE WORKING

TOGETHER TO BETTER DEFINE THE KINDS OF WORKING ENVIRONMENTS THAT NEW GRADUATES WILL ENTER, AND INDUSTRY IS OFFERING VIRTUALLY NO-STRINGS-ATTACHED HELP TO MANY SCHOOLS IN THE FORM OF DIRECT FUNDING FOR NEW PROGRAMS AND MODERN EQUIPMENT FOR STUDENT USE. CERTAINLY WHAT I'VE SEEN IN THE PAST YEAR SUGGESTS THE DAWNING OF A NEW AGE OF ENLIGHTENMENT FOR ENGINEERING EDUCATION.

CLEARLY THE FEDERAL GOVERNMENT HAS A KEY ROLE IN THIS TRANSFORMATION. IN LIGHT OF THE KIND OF COMPETITIVE ENVIRONMENT THAT U.S. INDUSTRY IS GOING TO CONTINUE TO OPERATE IN FOR THE REST OF THIS CENTURY, WE WANT TO HELP OUR UNIVERSITIES PROVIDE THE BEST KIND OF TRAINING POSSIBLE.

SO IN 1985 NSF WILL INITIATE A NEW PROGRAM IN UNIVERSITIES TO INTEGRATE BOTH RESEARCH AND TEACHING NEEDS FOR ENGINEERING. THIS PROGRAM IS BEING DEVELOPED WITH THE BROAD PARTICIPATION OF THE ENGINEERING COMMUNITY AND THE NATIONAL ACADEMY OF ENGINEERING. THE AIM IS TO ESTABLISH CROSS-DISCIPLINARY CENTERS IN WHICH STUDENTS AND FACULTY CAN WORK ON BROAD RESEARCH PROBLEMS OF THE TYPE FACING INDUSTRY--AND THAT USES THE MODERN TOOLS AND METHODS THAT INDUSTRY USES. THIS IS ONE OF SEVERAL NEW EFFORTS AT NSF TO IMPROVE ENGINEERING RESEARCH AND EDUCATION AT UNIVERSITIES.

NOW LET ME DESCRIBE A COMPLETELY DIFFERENT KIND OF PROGRAM THAT, IN AN IMPORTANT WAY, ALSO RELATES TO THIS CONCERN FOR TALENT. I'M REFERRING HERE TO THE DEVELOPMENT, ACQUISITION, AND AVAILABILITY FOR THE RESEARCH COMMUNITY OF SUPERCOMPUTERS. I BELIEVE WE ALL AGREE THAT IT'S IMPERATIVE FOR OUR ACADEMIC RESEARCH COMMUNITY--FACULTY AND STUDENTS--TO HAVE OPPORTUNITIES TO WORK WITH STATE-OF-THE-ART COMPUTING TOOLS.

LET ME SUGGEST THREE MAIN REASONS FOR THIS IMPORTANCE. ONE IS THE DIRECT BENEFIT TO FRONTIER RESEARCH; SUPERCOMPUTERS OFFER THE BEST KNOWN WAY TO ATTACK MANY LARGE-SCALE SCIENCE AND ENGINEERING PROBLEMS, A WAY TO MODEL COMPLEX PHYSICAL INTERACTIONS. SECOND IS THE OPPORTUNITY FOR YOUNG SCIENTISTS AND ENGINEERS TO LEARN WHAT SUPERCOMPUTERS CAN DO AND TO BECOME FAMILIAR WITH THEM. AFTER ALL, THESE PEOPLE ARE THE ONES WHO WILL BE DEVELOPING THE SUPERCOMPUTERS' POTENTIAL FOR SOLVING NEW KINDS OF PROBLEMS IN THE FUTURE. AND THIRD IS THE VITAL CONTRIBUTIONS THAT THE RESEARCH COMMUNITY WILL MAKE TO DESIGNING AND DEVELOPING THE SOFTWARE TO MAKE THE SUPERCOMPUTERS EVEN MORE USEFUL IN THE RESEARCH PROCESS.

MR. CHAIRMAN, I WANT TO BRIEFLY OUTLINE SOME SPECIFIC EFFORTS BEING PROPOSED FOR FY 1985.

BOTH NSF AND DOE PLAN TO PROVIDE INCREASED ACCESS FOR UNIVERSITY RESEARCHERS TO SUPERCOMPUTERS, BOTH BY ALLOCATING GREATER AMOUNTS OF TIME ON SUPERCOMPUTERS AT NATIONAL LABORATORIES, SUCH AS THROUGH DOE'S MAGNETIC FUSION ENERGY COMPUTING NETWORK, AND BY INSTALLATION OF NEW SUPERCOMPUTING FACILITIES DEDICATED TO ACADEMIC USERS. NSF WILL ALSO BE INSTALLING A CLASS VII SUPERCOMPUTER AT THE NATIONAL CENTER FOR ATMOSPHERIC RESEARCH FOR USE BY THE ATMOSPHERIC AND OCEAN SCIENCES COMMUNITY.

IN PARALLEL EFFORTS, DOE, NSF, AND DOD WILL FUND INCREASED RESEARCH IN VARIOUS AREAS OF COMPUTER SCIENCE AND ELECTRONICS THAT WILL BE APPLICABLE TO FUTURE GENERATIONS OF SUPERCOMPUTERS. WE'RE CONFIDENT THAT THESE VARIED ACTIVITIES, IN CONJUNCTION WITH CONTINUED PURCHASE OF THE MOST ADVANCED SUPERCOMPUTERS FOR DIRECT GOVERNMENT USE, WILL, IN TURN, PROVIDE THE MARKET INCENTIVES TO PERMIT U.S. COMMERCIAL MANUFACTURERS TO MAINTAIN THEIR TECHNOLOGICAL LEADERSHIP IN THIS FIELD.

I ALREADY DESCRIBED THE IMPORTANCE OF PROJECT SUPPORT TO THE VITALITY OF UNIVERSITIES, BUT I SHOULD ADD THAT PROJECT SUPPORT IS ALSO A PRIMARY MEANS BY WHICH WE REACH THE SECOND GOAL--THE PURSUIT OF EXCELLENCE. I WOULD ONLY ADD THAT THE TRIED-AND-TRUE METHOD OF INVESTIGATOR-INITIATED, PEER-REVIEWED RESEARCH GRANTS

HAS PRODUCED PHENOMENAL RESULTS OVER THE YEARS. THE FACT THAT U.S. SCIENTISTS WON FOUR OUT OF FOUR NOBEL PRIZES IN SCIENCE LAST YEAR REFLECTS ON THE EFFECTIVENESS OF THIS KIND OF SYSTEM FOR SUPPORTING BASIC RESEARCH.

ALTHOUGH THERE ARE MANY, I'LL OFFER ONLY ONE SPECIFIC EXAMPLE OF A 1985 INITIATIVE INTENDED TO HELP AMERICAN SCIENTISTS CONTINUE TO PURSUE EXCELLENCE. AND I OFFER IT ~~BECAUSE~~ BECAUSE IT REPRESENTS A FIELD OF SCIENCE IN WHICH THIS COUNTRY HAS BEEN A WORLD LEADER AND ALSO A FIELD THAT DEMANDS EXTREMELY CAREFUL--NOT TO MENTION WISE--DECISIONS ABOUT FUTURE PROGRAMS.

IN A SENSE, HIGH-ENERGY, OR PARTICLE PHYSICS, IS A FIELD OF SCIENCE THAT PUSHES HARDEST AT THE FRONTIERS OF KNOWLEDGE. THE QUESTIONS IT ASKS ARE IN MANY WAYS THE MOST FUNDAMENTAL IN NATURE, AND THE ANSWERS ARE SURELY AMONG THE HARDEST TO FIND. OVER THE YEARS THERE HAVE BEEN IMPORTANT DIRECT APPLICATIONS TO OTHER AREAS OF SCIENCE AND TECHNOLOGY OF KNOWLEDGE FIRST DERIVED FROM THIS KIND OF FRONT-LINE PHYSICS RESEARCH.

BUT WHAT I THINK WE HAVE TO REALIZE IS THAT FIELDS LIKE THIS ARE IMPORTANT AS MUCH FOR THE WAY THEY ATTRACT AND STIMULATE HUMAN INTELLECT AS FOR THEIR SPECIFIC RESULTS. IN A SENSE, FIELDS LIKE PARTICLE PHYSICS, OR

ASTROPHYSICS, OR MOLECULAR BIOLOGY, OR MATHEMATICS ARE STIMULI FOR OUR BROAD NATIONAL STRENGTH IN SCIENCE AND TECHNOLOGY.

OF THOSE FIELDS PARTICLE PHYSICS IS NO DOUBT THE MOST EXPENSIVE TO PURSUE TODAY. IT'S THAT EXPENSE THAT FORCES US TO MAKE, AS I SAID, WISE DECISIONS ABOUT WHAT COURSE WE'LL PURSUE. IT WAS THAT EXPENSE THAT LED TO A FUNDAMENTAL RETHINKING BY THE HIGH-ENERGY PHYSICS COMMUNITY, LAST YEAR, OF WHERE THE U.S. SHOULD BE GOING IN PARTICLE PHYSICS. THE RESULT OF THAT INTROSPECTION WAS THE DECISION TO TERMINATE A MAJOR ACCELERATOR PROJECT THAT WAS NO LONGER TIMELY AND FOCUS ATTENTION INSTEAD ON A BOLD STEP INTO NEW ENERGY REGIMES WITH AN ENTIRELY NEW ACCELERATOR LOOKING AT TRULY FOREFRONT QUESTIONS IN THE STRUCTURE OF MATTER.

I RELIEVE SUCH A PROJECT HAS STRONG MERIT IF IT CAN BE DESIGNED AND IF IT CAN BE BUILT FOR A REASONABLE COST, IN A REASONABLE TIME FRAME. THOSE ARE BIG "IFS," AND I DON'T THINK ANYONE CAN YET TELL US IF WE CAN MEET THOSE REQUIREMENTS. BUT WE'RE PROPOSING THAT IN FY 1985 WE BEGIN THE PROCESS OF TRYING TO FIND OUT. TO THAT END THE DEPARTMENT OF ENERGY WILL BEGIN R&D ON ADVANCED SUPERCONDUCTING PARTICLE ACCELERATOR CONCEPTS. THIS WOULD PERMIT US, AT SOME POINT LATER IN THIS DECADE, TO

DECIDE WHETHER OR NOT TO PROCEED WITH THE NEXT-GENERATION MACHINE, A SUPERCONDUCTING SUPERCOLLIDER. QUESTIONS OF HOW, WHERE, HOW MUCH, AND, PERHAPS, WITH WHOM, ARE ALL DEFERRED UNTIL WE HAVE A BETTER HANDLE ON THE TECHNOLOGY. I EMPHASIZE THAT WE PROPOSE NO COMMITMENT TO PROCEEDING BEYOND THIS R&D; CONSTRUCTION, SHOULD IT APPEAR FEASIBLE, WILL HAVE TO BE DECIDED LATER.

THE THIRD GOAL I MENTIONED, STIMULATING PARTNERSHIPS AMONG SCIENTISTS AND ENGINEERS IN UNIVERSITIES, FEDERAL LABS, AND INDUSTRY, REFLECTS THE PRESSING NEED TO IMPROVE THE TRANSFER AND APPLICATION OF NEW KNOWLEDGE TO NATIONAL NEEDS, PARTICULARLY IN INDUSTRY. I THINK WE'VE SEEN SOME REAL PROGRESS IN THE PAST FEW YEARS IN IMPROVING THESE INTERACTIONS, NOT SO MUCH BECAUSE OF ANYTHING GOVERNMENT HAS DONE AS MUCH AS BECAUSE OF THE BROAD NATIONAL AWARENESS OF THE NEED TO RESPOND TO THE OBVIOUS INDUSTRIAL AND MILITARY COMPETITION FROM ABROAD.

MY FIRST EXAMPLE OF BETTER PARTNERSHIPS FOCUSES ON THE FIELD OF AGRICULTURE. THERE'S LITTLE QUESTION BUT THAT WE HAVE MADE ONLY SLOW PROGRESS IN BRINGING THE BENEFITS OF THE MODERN BIOTECHNOLOGY REVOLUTION TO AMERICAN AGRICULTURE. THE RESULT, I'M AFRAID, IS THAT WE'VE FAILED TO TAKE THE PRUDENT STEPS NECESSARY TO PROTECT THE ENORMOUS WORLD LEADERSHIP WE'VE ENJOYED FOR SO LONG IN AGRICULTURE.

WE'VE ALREADY SEEN--PAINFULLY--HOW AGGRESSIVE COMPETITORS WHO ADOPT NEW TECHNOLOGIES AND RUN WITH THEM CAN MAKE SEVERE INROADS ON WHAT AMERICAN INDUSTRY ASSUMED WAS A GUARANTEED MARKET. AUTOMOBILES AND CONSUMER ELECTRONICS COME MOST READILY TO MIND. I WOULD HATE TO HAVE TO ADD AGRICULTURE TO THAT LIST TWENTY YEARS FROM NOW. LET ME ADD THAT I DON'T EXPECT TO. WE HAVE TREMENDOUS RESOURCES IN THIS COUNTRY THAT SHOULD ENABLE US TO MAINTAIN AND EXTEND OUR WORLD LEAD--BUT WE HAVE TO START NOW TO INCORPORATE THE FRUITS OF MOLECULAR BIOLOGY AND ITS OFFSHOOTS INTO A NEW FIELD OF AGRICULTURAL BIOTECHNOLOGY. TO ACCELERATE THAT PROCESS, IN FY 1985 THE DEPARTMENT OF AGRICULTURE WILL GREATLY EXPAND ITS COMPETITIVE GRANTS PROGRAM. THIS WILL INCLUDE A SUBSTANTIAL NEW AGRICULTURAL BIOTECHNOLOGY RESEARCH EFFORT WITHIN THAT PROGRAM.

WHEN WE TURN FROM ONE OF THE OLDEST TO ONE OF THE NEWEST AREAS OF SCIENCE AND TECHNOLOGY--THAT IS, TURN FROM AGRICULTURE TO SPACE--WE FIND JUST AS STRONG A NEED TO DEVELOP AND NURTURE PARTNERSHIPS BETWEEN THE SECTORS. THE PRESIDENT'S PROPOSAL THAT THE U.S. BEGIN WORK ON DEFINING AND BUILDING A SPACE STATION MARKS A RECOGNITION THAT WE ARE GOING TO OCCUPY AND USE SPACE ON A LARGER SCALE THAN EVER BEFORE. WE'LL BE SIMULTANEOUSLY ENLARGING OUR ABILITY TO EXPLORE SPACE AND ENLARGING THE NATION'S LONG-TERM OPTIONS FOR CREATING

A NEW BASE FOR INDUSTRIAL ACTIVITY. IT'S CLEAR THAT THIS ACTIVITY DEMANDS BROAD PARTICIPATION BY THE PRIVATE SECTOR TO IDENTIFY THE HIGHEST PRIORITY INDUSTRIAL OPPORTUNITIES AND TO BRING INDUSTRY'S EXPERTISE TO PLANNING SYSTEMS TO BE TESTED AND USED IN SPACE.

AT THE SAME TIME WE'RE COMMITTED TO MAINTAINING THE MOMENTUM WE'VE BUILT UP IN OUR VERY SUCCESSFUL PROGRAMS OF RESEARCH IN THE SPACE SCIENCES. WHEN WE LOOK AT THE NEW COMMITMENTS IN SPACE SCIENCES FOR FISCAL YEAR 1985, WE SEE SUCH MAJOR NEW PROGRAMS AS THE UPPER ATMOSPHERE RESEARCH SATELLITE, THE MARS CLIMATOLOGY/GEOSCIENCE ORBITER, THE NAVAL REMOTE OCEAN SENSING SATELLITE JOINING THOSE ALREADY UNDERWAY, SUCH AS THE SPACE TELESCOPE, THE GAMMA RAY OBSERVATORY, THE GALILEO JUPITER PROBE, THE VENUS RADAR MAPPER, AND A VARIETY OF SPACELAB SCIENCE PROGRAMS. I BELIEVE WE'RE EMBARKED ON AN INCREDIBLY PROMISING--AND BALANCED--SPACE SCIENCE PROGRAM, ONE THAT WILL NOT BE COMPROMISED BY THE MANNED SPACE EFFORTS BUT THAT WILL, IN FACT, COMPLEMENT IT. I THINK WE'RE ALL WELL AWARE OF THE LESSON OF THE IMPACT OF THE SHUTTLE ON SPACE SCIENCES IN THE 1970S--AND WE'RE NOT ABOUT TO SEE THAT HAPPEN AGAIN.

I'D ALSO LIKE TO BRING THE COMMITTEE UP TO DATE ON ANOTHER ATTEMPT TO STIMULATE NEW PARTNERSHIPS--THE

CENTER FOR ADVANCED MATERIALS AT LAWRENCE BERKELEY LABORATORY THAT IS NOW UNDERWAY. THE PROJECT HAS BENEFITTED DURING THE PAST YEAR FROM THOUGHTFUL REVIEW AND RECOMMENDATIONS FROM THE MATERIALS SCIENCE COMMUNITY, RECOMMENDATIONS THAT ARE BEING IMPLEMENTED. OUR ORIGINAL OBJECTIVES FOR THE CENTER ARE UNCHANGED--A PLACE TO BRING TOGETHER A RANGE OF MATERIALS AND OTHER SCIENTISTS FROM ACADEMIA, INDUSTRY, AND FEDERAL LABORATORIES TO WORK ON PROBLEMS OF FUNDAMENTAL IMPORTANCE TO FUTURE TECHNOLOGY.

MR. CHAIRMAN, I CAN'T THINK OF ANY EFFORT UNDERTAKEN BY MY OFFICE THAT IS MORE PERTINENT TO THIS GOAL OF PROMOTING PARTNERSHIPS THAN OUR EFFORT TO IMPROVE THE OPERATIONS OF THE NATION'S MORE-THAN 700 FEDERAL LABORATORIES. I'D LIKE TO BRING YOU UP TO DATE ON THE PROGRESS BEING MADE ON IMPLEMENTING THE RECOMMENDATIONS OF THE WHITE HOUSE SCIENCE COUNCIL'S REVIEW OF FEDERAL LABORATORIES. AS YOU KNOW, THIS REVIEW WAS DONE UNDER THE LEADERSHIP OF DAVID PACKARD AND RESULTED IN A SERIES OF RECOMMENDATIONS THAT WERE PRESENTED TO THE PRESIDENT LAST JULY. FOLLOWING THAT PRESENTATION, THE PRESIDENT INSTRUCTED USTP AND ONIB TO LEAD AN INTERAGENCY EFFORT TO WORK ON WAYS TO IMPLEMENT THE RECOMMENDATIONS IN THE PANEL'S REPORT--AND HE DIRECTED THE HEADS OF FEDERAL DEPARTMENTS AND AGENCIES TO WORK WITH US IN DOING THAT.

THE PACKARD PANEL, AFTER MORE THAN A YEAR OF STUDY OF THE FEDERAL LABS, CONCLUDED THAT THE NATION COULD BE DERIVING FAR MORE BENEFIT FROM THESE VALUABLE R&D RESOURCES, AND THEY RECOMMENDED CHANGES IN FIVE MAJOR AREAS TO HELP IMPROVE THEIR EFFECTIVENESS. WITHOUT GOING INTO DETAIL, I WOULD JUST INDICATE THAT THE RECOMMENDATIONS CALLED FOR CLEARER MISSIONS FOR THE LABS, FOR CHANGES IN THE PERSONNEL SYSTEMS TO ATTRACT AND RETAIN TOP TECHNICAL TALENT, FOR MORE STABLE FUNDING AND MORE AUTONOMY FOR THE LABS THEMSELVES IN MANAGING THEIR RESEARCH, AND FOR BROADER INTERACTIONS BETWEEN THE LABS AND OTHER PUBLIC AND PRIVATE SECTOR R&D ORGANIZATIONS.

OVER THE PAST HALF YEAR AN INTERAGENCY COMMITTEE HAS BEEN MAKING GOOD PROGRESS IN DEVELOPING APPROACHES TO CARRY OUT THE RECOMMENDATIONS. THEY'VE DONE THIS BY WORKING WITH LAB AND AGENCY OFFICIALS, WITH POTENTIAL USERS OF LAB RESULTS, AND WITH THE ORIGINAL WHITE HOUSE SCIENCE COUNCIL PANEL. AND IN THIS REGARD I WANT TO SPECIFICALLY ACKNOWLEDGE THE TREMENDOUS CONTRIBUTION THAT DAVID PACKARD HAS MADE AND CONTINUES TO MAKE IN THIS EFFORT.

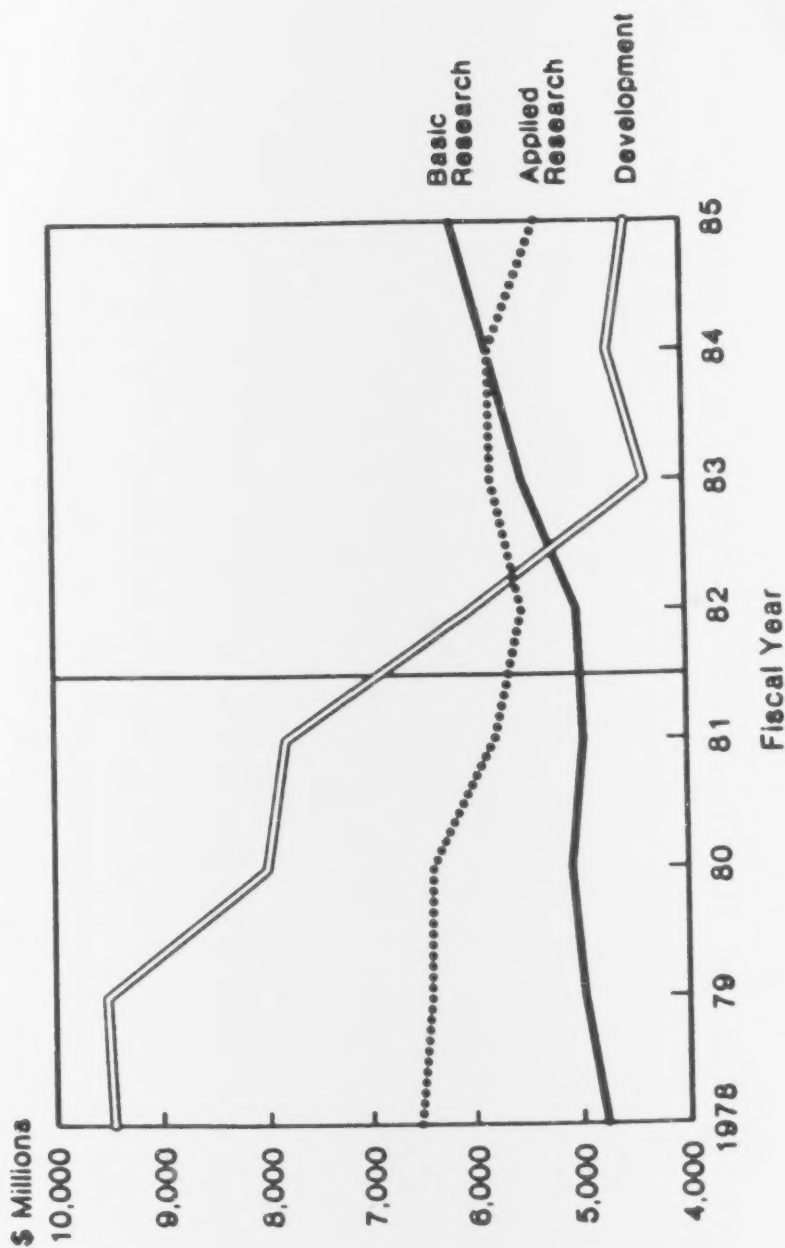
SOME OF THE RECOMMENDATIONS, SUCH AS THOSE ENCOURAGING GREATER INTERACTION WITH INDUSTRY AND UNIVERSITIES, CAN BE IMPLEMENTED DIRECTLY BY THE ACTIONS OF THE LABS AND

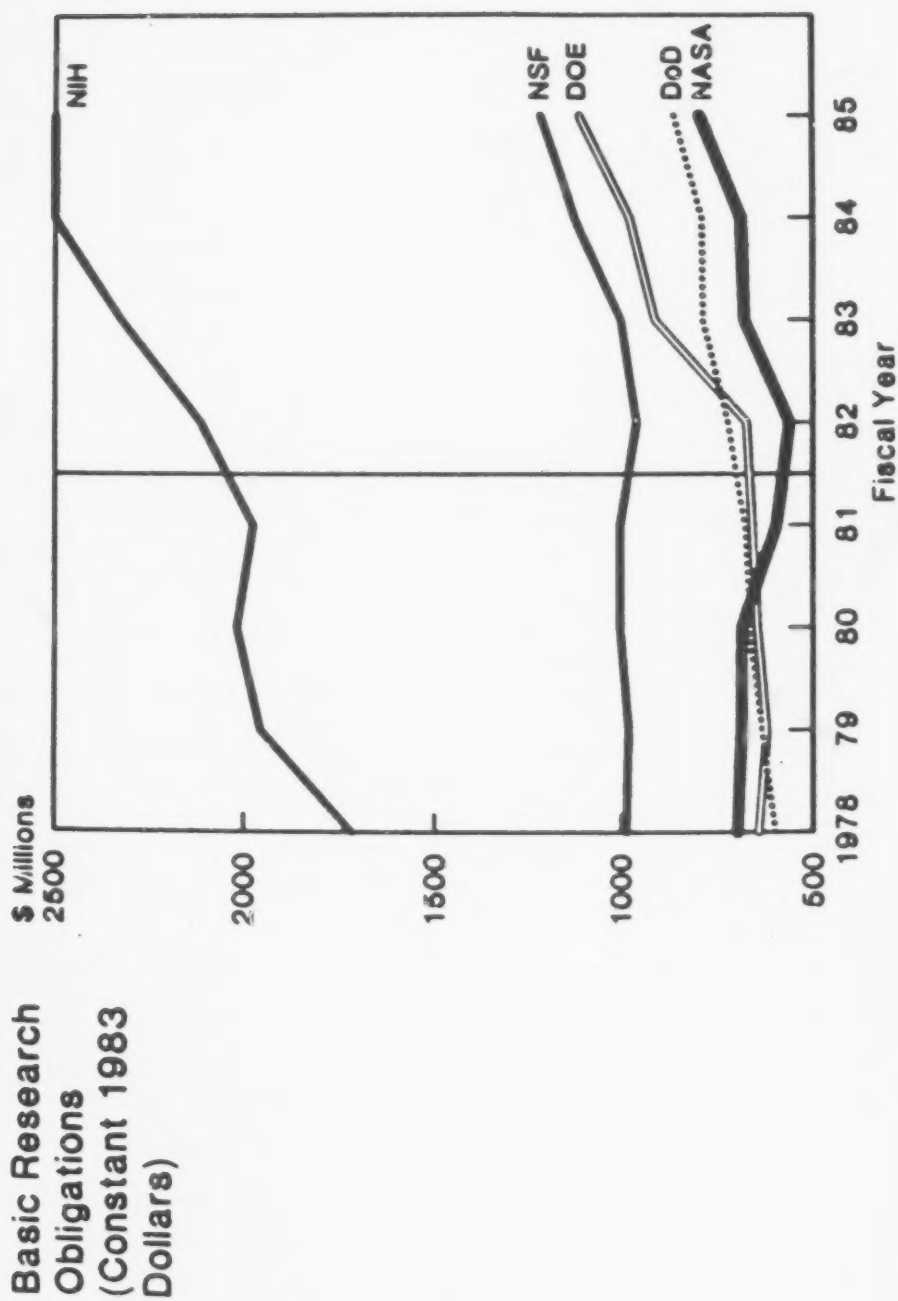
PARENT AGENCIES; OTHER RECOMMENDATIONS, SUCH AS THOSE CALLING FOR CHANGES IN FEDERAL PERSONNEL REGULATIONS, WILL REQUIRE LEGISLATION. AS SPECIFIC PROPOSALS BEGIN TO TAKE SHAPE, THE INDIVIDUAL AGENCIES, AS WELL AS MY OFFICE, WILL DISCUSS THEM WITH THE CONGRESSIONAL BODIES THAT HAVE OVERSIGHT RESPONSIBILITIES IN THESE AREAS. WE HOPE THAT THE BULK OF THIS WORK WILL BE COMPLETED BY THE TIME WE REPORT BACK TO THE PRESIDENT--JULY 1, 1984--THOUGH WE ALL RECOGNIZE THAT OPTIMIZING THE RETURN ON OUR MASSIVE INVESTMENT IN FEDERAL LABS--ABOUT ONE-THIRD OF THE TOTAL R&D BUDGET--DEMANDS CONTINUAL ATTENTION TO THE NATION'S R&D CLIMATE AND DEMANDS READINESS TO CHANGE AS THE TIMES CHANGE.

MR. CHAIRMAN, I CHOSE THESE FEW EXAMPLES OF FY 1985 INITIATIVES TO GIVE A FLAVOR FOR HOW SCIENCE POLICY IS IMPLEMENTED. I COULD AS EASILY HAVE CHOSEN MANY OTHER EXAMPLES, BECAUSE THE PROPOSED PROGRAM FOR FY 1985 IS INDEED EXCITING. WE HAVE AN EXCITING PROPOSAL FOR A CONTINUOUS ELECTRON BEAM ACCELERATOR FACILITY TO FOCUS ON THE ROLE OF QUARKS IN ATOMIC NUCLEI, AN IMAGINATIVE PROJECT UNDER THE DIRECTION OF A SOUTHEASTERN UNIVERSITY-BASED CONSORTIUM. NSF WILL BEGIN CONSTRUCTION OF A LONG-AWAITED AND UNIQUE ASTRONOMICAL FACILITY, THE VERY LONG BASELINE ARRAY OF RADIO TELESCOPES. NSF WILL ALSO BEGIN WORK ON DEFINING A POSSIBLE CONTINENTAL DRILLING PROGRAM TO INVESTIGATE IMPORTANT PHENOMENA DEEP IN THE EARTH'S CRUST. AND THERE ARE MANY MORE THAT YOU'LL BE HEARING FROM INDIVIDUAL AGENCIES APPEARING BEFORE THE CONGRESS.

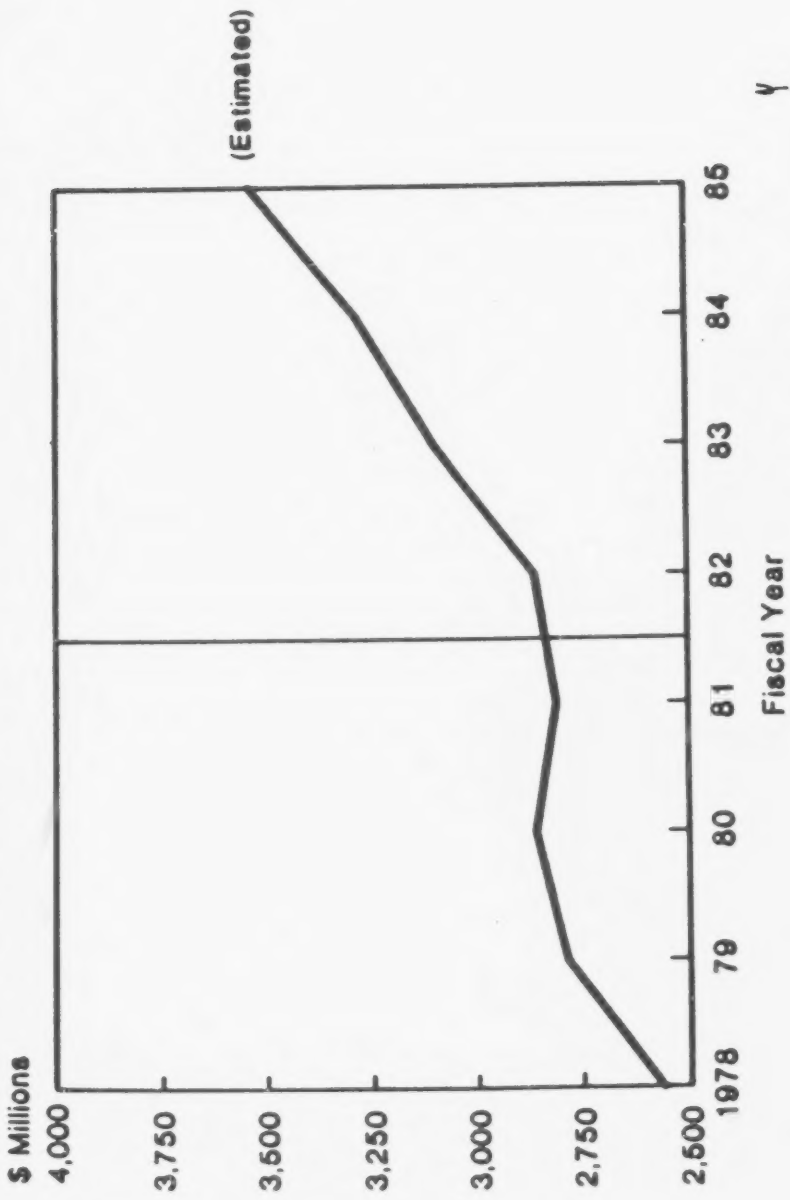
MR. CHAIRMAN, THIS CONCLUDES MY FORMAL PRESENTATION. I WOULD BE HAPPY TO RESPOND TO QUESTIONS FROM THE COMMITTEE.

Federal R&D Obligations (Non-Defense) in Constant 1983 Dollars





**Basic Research Obligations to Universities and Colleges
(Constant 1983 Dollars)**



Chairman DOMENICI. Let me ask, Senator, do you want to proceed with questions of Dr. Keyworth, or if we could arrange to have more of the witnesses and then put them on as a panel for questions; would that satisfy you?

Senator GRASSLEY. I just want to tell you I am not sure that I am going to be here other than to just listen to the testimony, because I have had a chance to review some of it.

Chairman DOMENICI. Why do you not ask the questions if you have some?

Senator GRASSLEY. Well, no; I do not think I am going to ask any, that is what I want to tell you. But if I do, I will call you on an ad hoc basis.

Chairman DOMENICI. Thank you very much.

How soon do you have to be elsewhere, Dr. Keyworth?

Dr. KEYWORTH. I am supposed to leave at 11 at the latest—wait a minute, 11:30 at the latest.

Chairman DOMENICI. All right.

Why do we not proceed with one more witness and then ask two of you questions; would that be all right?

Dr. KEYWORTH. Sure.

Chairman DOMENICI. You can just stay at the table if you like.

Dr. Carey, the executive director of the American Association for the Advancement of Science. Why do you not proceed and the two of you will be up here together. We had Beggs next? I am sorry. We are going to take Dr. Beggs, that is correct. I am sorry.

The Administrator of NASA, why do you not come up, Doctor, and we will proceed.

All right, Doctor, do you want to submit your testimony for the record, we will do that. It will be admitted without objection.¹

You may proceed. We are glad to have you here.

STATEMENT OF JAMES M. BEGGS, ADMINISTRATOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Mr. BEGGS. Thank you, Mr. Chairman.

Mr. Chairman and members of the Committee, I am pleased to have this opportunity to discuss President Reagan's proposed budget for NASA for fiscal year 1985. This budget is both in spirit and farsighted in vision. It reflects the President's commitment to a forward looking and imaginative initiative for the Nation, a permanently manned space station as the next logical step in space. Such a facility will give us a permanent presence in lower Earth orbit by the early nineties and will be the cornerstone of our activities in space through the end of this century and beyond.

Inherent in this proposal is the President's vision of the future which embodies continued U.S. leadership in space technology, space exploration, and the commercial uses of space while simultaneously encouraging international cooperation.

The President has proposed a NASA budget of just under \$7.5 billion for fiscal year 1985. This represents an overall increase of \$274 million, or about 4 percent over our present plan for fiscal year 1984.

¹ See p. 461.

BUDGET CONTAINS POSITIVE STEP IN TERMS OF PROGRAM OUTLOOK

The fiscal year 1985 budget also contains a positive step in terms of program outlook and institutional stability. The President's 5-year projections include real growth in NASA activities of 1 percent per year over the 1986 to 1989 period. These projections do not merely provide for the future years costs of programs proposed for this budget year, as was the previous practice, but include an allowance for the future new initiatives that are essential to a vital program of leadership in space and aeronautics. I would call your attention in particular to the growth allowance reflected for ongoing and new science and applications program. While the projected growth is fairly modest, it will allow us to undertake and accomplish the space station effort and it will support a vigorous space science and technology program through the introduction of a number of new initiatives during this 5-year period. This approach gives us an opportunity to plan and implement a forward looking program and provides added incentive for our people to make it happen. The President's multiyear estimates recognize the importance of stability and long-term commitment for maintaining NASA's research and development base as well as for realizing the fruits of high technology investments.

The President's space station initiative will reflect and contribute to America's commitment to research technology and productivity; be a peaceful visible demonstration of U.S. strength; implement the clear direction the space program has needed and found in the President's national space policy set forth in July 1982 which reflects a thorough review of our long-range goals and plans in space; provide new capabilities for science and applications, thereby continuing the tradition of scientific achievement and excellence which the Nation has come to associate with the space program, and finally enhance the opportunity for commercial investment and economic return from space based research and processes.

SPACE STATION NECESSARY

The idea of a space station, Mr. Chairman, is not new. However, a combination of circumstances make the President's initiative especially timely. The most important reason to begin a space station now is that the space shuttle is approaching full operational status. To maximize the unique advantages provided by the environment of space, we need to establish a permanent presence that enables us to work in space fulltime to fully utilize the capabilities of the space shuttle.

A second reason is that the operations we have conducted with the shuttle have stimulated great interest in the private sector to look toward investment in future space activities. The construction of a space station is necessary to create the facilities that will greatly encourage such an investment and stimulate new technology that will spin off into the U.S. economy. A space station will provide a threshold for significant commercial exploitation of the space environment.

Finally, the shuttle has also stimulated great international interest in the U.S. space program. As the President stated, we will plan

the space station program in such a way that it will be possible for our friends and allies around the world to participate with us in taking this major step.

SPACE STATION FUNCTIONS

Based upon NASA and industry analysis over the past 18 months, the space station program will serve a number of functions, among which a laboratory in space for the conduct of science and the development of new technologies; a permanent observatory to look down upon the Earth and out at the universe; a transportation node where payloads and vehicles are stationed, processed and propelled to their destinations; a servicing facility, where these payloads and vehicles are maintained and, if necessary, repaired; an assembly facility where, due to ample time on orbit and the presence of appropriate equipment, large structures are put together and checked out; a manufacturing facility where human intelligence and the servicing capability of the station combine to enhance commercial opportunities in space; a storage depot where payloads and parts are kept on orbit for subsequent deployment; and, finally, a staging basis for more ambitious future missions.

Perhaps more important than any of these individual points, however, is that the space station, in my belief, will lead to important activities and functions that we cannot even predict today. The space station will represent a fundamentally new and versatile capability to support activities in space in the decade of the 1990's and beyond.

SPACE STATION WILL OPEN NEW AREAS

Just as the use of communication satellites has revolutionized the long-range communications during the past 15 years, I believe that the space station will open new areas in which the industrial uses of space will become commonplace.

As we now see it, the station would consist of a manned base and associated unmanned platforms oriented to the needs of both science and applications and possibly industrial missions, and maintained from the base. The base and the platforms would be launched in modular sections carried into orbit in the cargo bay of the shuttle. The shuttle would also be used for logistics resupply and crew rotation. We believe that the enabling capability of the space station can be in place within a decade and for approximately \$8 billion in today's dollars over the development phase.

For fiscal year 1985, we are requesting \$150 million for the space station program. These funds are classified in function 250 and represent the minimum amount sufficient to begin an endeavor of this importance and scope, and necessary to assure an efficient and well conceived space station program. In this regard, we have planned an extensive definition effort with sufficient resources to assure that the program, when hardware development is initiated, will be thoroughly defined, responsive to user requirements, and based on the proper mix of man and machine, incorporating the most advanced technology available.

SPACE SHUTTLE NO. 1 PRIORITY

Mr. Chairman, making the space shuttle fully operational and cost effective remains NASA's No. 1 priority. The space shuttle has continued to perform splendidly and there have been major achievements in the past year. Perhaps the most important one was the first flight of spacelab, a manned scientific laboratory built and paid for by the Europeans that is placed in the payload bay of the shuttle orbiter. The spacelab-1 flight demonstrated that people in space can perform very complex experiments and that real time corrections and fixes to the experiments can greatly enhance our ability to get important scientific results. The results of spacelab-1 confirmed the capability of scientists in space to perform valuable experimental work, particularly when there are real time communications between the onboard crew and their scientific colleagues on the ground. The mission gave credence to our plans for scientific utilization of the space station. And I continue to believe that the investments we have made in the space shuttle system will pay off handsomely in the future. The shuttle has become the Nation's primary space launch system and, because of this, we are continuing the program to produce the spare parts required to assure a launch capability that is so important in both the civil and national security related sectors. We are also continuing the structural spares program. These spares could be readily used in assembly of another orbiter should the decision be made to take that step.

As the shuttle increases its services to other U.S. Government, commercial and international customers, reimbursements for shuttle flights are projected to increase substantially from \$264 million in fiscal year 1984 to \$676 million in fiscal year 1985, and further to a projected total of more than \$1.5 billion in fiscal year 1989. These increases, along with the anticipated improvements in shuttle operations costs, will allow us to increase the shuttle flight rate to 24 per year while reducing the requirements for funds appropriated to NASA for shuttle operations. In addition to supporting the flight requirements of the Department of Defense, NASA fully expects to capture a significant share of the foreign and commercial market. Our reimbursement projections are consistent with that expectation.

The President's proposed program for space science and applications will maintain U.S. capability and leadership in the pursuit of scientific knowledge and new applications of space technology to national needs. The funding request represents a well-structured and balanced program in various space science and applications disciplines. The President's proposed budget for NASA reflects a significant increase in total effort in basic research, as well as an augmentation in university-based research.

NEW INITIATIVES PROPOSED IN BUDGET

In our fiscal year 1985 budget for space science and applications, we are proposing several new important initiatives. One is the upper atmosphere research satellite, which is planned for launch in 1989, and will provide detailed measurements of the physical and chemical properties of the upper atmosphere.

Another new initiative is the Mars geoscience/climatology orbiter planned for launch in 1990. This is an example of how NASA, acting on behalf of all of us, reflects mankind's inherent desire to learn about the planets and stars. The mission will be designed to obtain new geophysical and geochemical information about Mars, especially near the polar regions where little data is available.

This budget request will support the continuation of the space telescope development effort, leading to a launch in the second half of 1986. It allows for continued development of the Galileo mission to Jupiter which will also be launched in 1986; allows for continuation of U.S. participation in the international solar polar mission also planned for launch in 1986; provides for the continued development of the gamma ray observatory for launch in 1988; and continues the Venus radar mapper development activities for launch in 1988. In addition, this funding level allows a broad spectrum of research activities and scientific inquiries into many basic scientific disciplines encompassing astrophysics, astronomy, solar system exploration, Earth science and applications, life sciences, microgravity science and applications, communications technology, and information systems.

UTILIZATION OF BOTH MANNED AND UNMANNED ELEMENTS STUDIED

In anticipation of the future space station, the space science and applications program is actively studying possible space science and applications utilization of both manned and unmanned elements of the proposed space station program. Close links have been established between the respective program activities within NASA, and advice is being sought from appropriate communities to insure that space station planning appropriately consider space science and applications requirements. I can assure you that the space science and applications program will continue to be closely involved in the design and definition of the space station program.

Mr. Chairman, I have attempted to provide you and members of the committee with a short overview of the administration's proposed fiscal year 1985 space program for NASA. I believe that it is an excellent program that will continue to insure our Nation's leadership in space in the coming years. The program also provides a new vision for the future which is both realistic and farsighted. I solicit your assistance and leadership in effecting the program that I am presenting today.

Mr. Chairman, that concludes my statement. I will be pleased to answer any questions.

Chairman DOMENICI. Thank you, Mr. Beggs.

[The prepared statement of Mr. Beggs follows:]

Statement of
James M. Beggs
Administrator
National Aeronautics and Space Administration

before the

Committee on Budget
United States Senate

Mr. Chairman and Distinguished Members of the Committee:

It is a pleasure for me to appear before this Committee to present President Reagan's budget request for NASA space programs for FY 1985 and the Space Station initiative. The total Agency request for FY 1985 is \$7.5 billion. A chart summarizing NASA's FY 1985 budget request is appended to this statement as Figure 1. NASA's FY 1985 request displayed in terms of budget subfunction is appended as Figure 2.

In his State of the Union message to Congress, President Reagan outlined a bold new initiative for the United States that will maintain and ensure, during the decade of the 1990's and beyond, our hard won position of leadership in space. The President's initiative is a permanently manned Space Station to be in operation within a decade. As a fundamental element of his vision for this Nation's future, the Space Station will:

- o reflect and contribute to America's commitment to research, technology and productivity;
- o be a peaceful, visible demonstration of U.S. strength and commitment to leadership;
- o implement the clear direction the civil space program has needed and found in the President's National Space Policy set forth in July of 1982, which reflects a thorough review of our long-range goals and plans in space;
- o provide new capabilities for science and applications, thereby continuing the tradition of scientific achievement and excellence which the Nation has come to associate with the space program.

The time for Space Station is ripe -- the agenda for tasks which can be undertaken and enhanced using the unique capabilities of the Space Station is full, and both U.S. industry and the NASA institution are fully prepared to implement the President's

initiative. The Station is, I believe, the next logical step in space.

The idea of a Space Station Mr. Chairman, is not new; however, a combination of circumstances makes the President's initiative especially timely. The most important reason to begin a Space Station now is that the Space Shuttle is approaching fully operational status. After a ten year development program, we now have the capability to reach low Earth orbit routinely. To maximize the unique advantages provided by the environment of space, we need to establish a permanent presence that enables us to work in space full time and fully utilizes the capabilities of the Space Shuttle. Without the capability of the Shuttle, it would be impossible to establish the "more permanent presence in space" referenced by the President on July 4, 1982, in his National Space Policy statement.

A second reason is that the operations we have conducted with the Shuttle have stimulated great interest in the private sector to look toward investments in future space activities. The construction of a Space Station is necessary to create the facilities that will greatly encourage such investment, and to stimulate new technology that will spin off into the U.S. economy.

Finally, the Shuttle has also stimulated great international interest in the U.S. Space Program, as evidenced by the overwhelming reception of the "Enterprise" in Europe last summer and the recent highly successful flight of the Spacelab. As the President stated, we will plan the Space Station program in such a way that it will be possible for our friends and allies around the world to participate with us in taking this major step.

Based upon NASA and industry analyses over the past 18 months, the Space Station program will serve a number of functions, such as:

- o a laboratory in space, for the conduct of science and the development of new technologies;
- o a permanent observatory, to look down upon the Earth and out at the universe;
- o a transportation node where payloads and vehicles are stationed, processed and propelled to their destinations;
- o a servicing facility, where these payloads and vehicles are maintained, and if necessary, repaired;
- o an assembly facility where, due to ample time on orbit and the presence of appropriate equipment, large structures are put together and checked out;

- o a manufacturing facility where human intelligence and the servicing capability of the Station combine to enhance commercial opportunities in space;
- o a storage depot where payloads and parts are kept on orbit for subsequent deployment; and,
- o a staging base for more ambitious future missions.

Perhaps more important than any of these individual points, however, is that the Space Station, in my belief, will lead to important activities and functions that we cannot even predict today. The Space Station will represent a fundamentally new and versatile capability to support activities in space in the decade of the 1990's and beyond.

While definition of a specific Station configuration is yet ahead of us, it might be appropriate to describe conceptually what NASA now considers the Station to encompass. A Space Station is conceived as a multi-purpose, permanent facility in low-Earth orbit, that is comprised of both manned and unmanned elements and that significantly enhances the efficiency of our operations in space. As we now see it the Station would consist of a manned base and associated unmanned platforms, oriented to the needs of both science and applications missions, and maintained from the base. The base and the platforms would be launched in modular sections carried into orbit in the cargo bay of the Shuttle. The Shuttle would also be used for logistics resupply and crew rotation. We believe that the enabling capability of the Space Station can be in place within a decade and for approximately \$8 billion in today's dollars over the development phase.

For FY 1985 we are requesting \$150.0 million for the Space Station program. These funds are classified in Function 250 and represent the minimum amount sufficient to begin an endeavor of this importance and scope, and necessary to assure an efficient and well-conceived Space Station program. In this regard, we have planned an extensive definition effort with sufficient resources to assure that the program, when hardware development is initiated, will be thoroughly defined, responsive to user requirements, and based on the proper mix of man and machine, incorporating the most advanced technology available. These definition efforts will include an automation plan to utilize the best of both manned and unmanned modes to achieve optimum productivity at the Station. The FY 1985 program will comprise the first year of this detailed engineering definition effort which will provide the basis for the final design for the construction of the Space Station.

The FY 1985 budget also contains a positive step in terms of program outlook and institutional stability. The President's five-year projections include real growth in NASA activity of one percent per year over the 1986-1989 period. The President's FY

1985 budget multi-year estimates for NASA are displayed in Figure 2, appended to my statement. These projections do not merely provide for the future year costs of programs proposed for this budget year, as was the previous practice, but include an allowance for the future new initiatives that are essential to a vital program of leadership in Space and Aeronautics. I would call your attention, in particular, to the growth allowance reflected for ongoing and new Science and Applications programs. This approach gives us an opportunity to plan and implement a forward-looking program, and provides added incentive to our people to make it happen.

Mr. Chairman, making the Space Shuttle fully operational and cost-effective remains NASA's number one priority. The Space Shuttle has continued to perform splendidly and there have been major achievements in the past year. Perhaps the most important one was the first flight of Spacelab, a manned scientific laboratory built and paid for by the Europeans that is placed in the payload bay of the Shuttle orbiter. The Spacelab-1 flight demonstrated that people in space can perform very complex experiments and that real-time corrections and fixes to the experiments can greatly enhance our ability to get important scientific results. The results of Spacelab-1 confirmed the capability of scientists in space to perform valuable experimental work and gave credence to our plans for scientific utilization of the Space Station. The ten-day mission met all of its verification objectives and obtained excellent scientific results. The flight was also an extremely important example of how complex international collaborative efforts can be successfully carried out. Mr. Chairman, the Spacelab was funded and built primarily by the European Space Agency and one of the people on the first Spacelab flight was a European scientist. The Spacelab flight drew a great deal of favorable attention in Europe and, there is no doubt in my mind, it contributed to strengthening our relations with our European allies during a particularly critical time last year.

Last year, we had five successful Shuttle flights. During these flights, we flew the second orbiter, Challenger; made the first night launch and landing; accomplished the first landing at the Kennedy Space Center; and flew the first woman (Sally Ride), the first two blacks (Guy Bluford and Ron McNair) and the first two payload specialists including a foreign scientist (Ulf Merbold). We are now looking forward to the selection of private citizens as passengers on future Shuttle flights, possibly as early as 1985.

We also conducted our first extra-vehicular activity from the Shuttle and it was very successful. We have learned much about the operational environment of the payload bay and it is our intent to put this knowledge to good use. The most recent flight of Challenger successfully conducted the first untethered extra-vehicular activity to test the new Manned Maneuvering Unit. However, on the same flight two reimbursable communication

satellite missions experienced anomalies. One of the affected satellites was for Western Union (Westar VI) and one for the Indonesian Government (Palapa-B2). These missions were successfully launched out of the orbiter bay, but because of an anomaly believed to be in the commercially provided spacecraft's Payload Assist Module (PAM-D), the spacecraft did not achieve proper orbit. The causes of these failures are under investigation.

On the following flight we will retrieve a failed satellite (the Solar Maximum Mission satellite, SMM), bring it to the Shuttle and attempt to make the necessary repairs. If the repairs are successful, we will redeploy the satellite. If they are not, we will bring the satellite back to the ground for repair and redeploy it on a subsequent Shuttle mission. These operations are extremely important, not only because they will permit the extension of the lifetime of this valuable satellite, but also because they will be a dramatic demonstration of the great capability that is inherent in the Shuttle system.

Including the SMM repair mission, seven or eight Shuttle flights are scheduled for FY 1984. These flights include the first dedicated Department of Defense mission; the first flight of the Space Shuttle Orbiter "Discovery;" the first autoland; and the deployment of seven commercial communications satellites. A number of science and technology payloads will be flown, including the Large Format Camera and the Shuttle Imaging Radar. These missions will utilize all three of the delivered Space Shuttle Orbiters: Columbia, Challenger, and Discovery. Atlantis, the fourth orbiter, is scheduled for delivery toward the end of 1984.

In FY 1985, the Space Transportation Operations budget provides for 11 Space Shuttle flights, including three dedicated Spacelab missions; completion of the TDRSS constellation of three orbiting spacecraft; the deployment of eight communications satellites; the first retrieval of a Shuttle-deployed spacecraft, the Long Duration Exposure Facility; transition from the conceptual phase of the McDonnell Douglas electrophoresis experimentation to small prototype production plants that will produce products in quantities sufficient to begin testing and marketing; and continued use of the Shuttle by the Department of Defense. The STS flight rate will continue to increase toward a rate of 24 per year by FY 1989, when we expect to launch about 20 from KSC and the remainder from Vandenberg Air Force Base. The first flight from Vandenberg is planned for FY 1986.

In view of the successful performance of the Shuttle during the past year, I continue to believe that the investments we have made in the Space Shuttle system will pay off handsomely in the future. The Shuttle has become the Nation's primary space launch system; because of this, we are continuing the program to produce the spare parts required to assure a launch capability that is so important in both the civil and the national security

related sectors. We are also continuing the structural spares program; this will make it possible to assemble another orbiter should the decision be made to take this step.

As the Shuttle increases its services to other U.S. Government, commercial, and international customers, reimbursements are projected to increase substantially from \$264 million in FY 1984, to \$676 million in FY 1985, to a projected total of more than \$1.5 billion in FY 1989. These increases, along with the anticipated improvements in Shuttle operations costs, will allow us to maintain an approximately level funding plan for the Space Transportation System while the flight rate is projected to increase during that same period to 24 flights per year. In addition to supporting the flight requirements of the Department of Defense, NASA fully expects to capture a significant share of the foreign and commercial market. Our reimbursement projections are consistent with that expectation.

In our Space Science and Applications program, the most important achievement during the past year was the successful launch of the Infrared Astronomical Satellite (IRAS), a cooperative project of the United States, the Netherlands and the United Kingdom. The mission was launched in January 1983, and remained operational through December 1983. A number of important discoveries have been announced, but in my opinion two are particularly outstanding. One is the discovery of about 20,000 new asteroids -- about ten times as many as were previously known -- with diameters between one and ten miles. This is a truly astonishing number and it is a result that was generally not expected by the astronomical community. Another equally important discovery of IRAS was that the star Vega is apparently surrounded by a dust cloud that is a prototype for the kind of planetary system that surrounds the Sun. This is the first positive evidence that there may be other stars in our galaxy that have planetary systems similar to those of the Sun. The large quantity of data that has been generated by the IRAS is now being analyzed. I am confident, Mr. Chairman, that equally significant discoveries will be made in the coming months as we look more carefully through the measurements that have been made by this satellite.

The President's proposed program for Space Science and Applications will maintain U.S. capability and leadership in the pursuit of scientific knowledge and new applications of space technology to national needs. The funding request represents a well-structured and balanced program in various Space Science and Applications disciplines. The President's proposed budget for NASA reflects a significant increase in total effort in basic research, as well as an augmentation in university-based research.

In our FY 1985 budget request for Space Science and Applications, we are proposing several new important initiatives. One is the Upper Atmosphere Research Satellite, which is planned for launch in 1989, and will provide detailed measurements of the physical and chemical properties of the upper atmosphere. A particularly important aspect of the Upper Atmosphere Research Satellite program is that it will provide information about the molecular species in the upper atmosphere that determine the radiation transport properties in that region. These properties, in turn, have a strong effect on the world's weather patterns, but perhaps more significantly on the long-term changes that may affect the eventual ability of the Earth to continue to support life. I believe that the Upper Atmosphere Research Satellite is a significant new initiative. It is an example of how we use space for solutions to problems here on Earth.

Another new initiative is the Mars Geoscience/Climatology Orbiter planned for launch in 1990. This is an example of how NASA, acting on behalf of all of us, reflects mankind's inherent desire to learn about the planets and stars. The mission will be designed to obtain new geophysical and geochemical information about Mars, especially near the polar regions where little data is available. This mission is the highest priority of a number of relatively low-cost missions which were recommended by the Solar System Exploration Committee to provide a more intensive investigation of specific questions in planetary science. I believe the approach we are taking on this mission will be both an efficient and cost-effective method of planetary exploration.

This budget request will support the continuation of the Space Telescope development effort, leading to a launch in the second half of 1986; it allows for continued development of the Galileo mission to Jupiter which will be launched on the Shuttle/Centaur combination in 1986; allows for continuation of U.S. participation in the International Solar Polar Mission also planned for launch on the Shuttle/Centaur in 1986; provides for the continued development of the Gamma Ray Observatory (GRO) for launch in 1988; and continues the Venus Radar Mapper (VRM) development activities for launch in 1988. In this budget we will carry out the Advanced Communications Technology Satellite (ACTS) effort as a ground-based technology development and test program. We will develop and provide a scatterometer radar that will be flown for the U.S. Navy Remote Sensing Satellite (N-ROSS). We will continue work on our Explorer program. This budget also supports the development of instrumentation and associated mission management activities for the Spacelab 2, 3, and 4, and other Shuttle missions. In addition, this funding level allows a broad spectrum of research activities and scientific inquiries into many basic scientific disciplines encompassing astrophysics, astronomy, solar system exploration, Earth science and applications, life sciences, microgravity science and applications, communications technology and information systems.

In anticipation of the future Space Station, the Space Science and Applications program is actively studying possible space science and applications utilization of both manned and unmanned elements of the proposed Space Station program. Close links have been established between the respective program activities within NASA, and advice is being sought from appropriate communities to ensure that Space Station planning appropriately considers space science and applications requirements. I can assure you that the Space Science and Applications program will continue to be closely involved in the design and definition of the Space Station program.

The President's program also provides for activities in Space Research and Technology, and Space Tracking and Data Systems in support of the entire space program. The Space Research and Technology program provides a broad base of long-term, high-risk, high-potential technology essential to NASA's role of maintaining U.S. preeminence in space, and supports the Agency goals of improved operational effectiveness of the Space Transportation System, extended capabilities for U.S. science and applications missions, and technology requirements for the Space Station program. The Space Tracking and Data Systems program will provide for continuation of the vital tracking, command, telemetry, communications, and data processing support to meet the requirements for all NASA flight programs.

Mr. Chairman, I am very pleased to report that the NASA institution is fully prepared to maintain the position of leadership in space the United States has earned over the past twenty-five years. Perhaps the most important factor is that with the support of this Administration and the cooperation of the Congress, the decline in the civil service complement assigned to NASA has been stopped. For the past two years, the NASA civil service complement has been stable at approximately 22,000 positions (at one time we had approximately 34,000 civil servants), and the FY 1985 budget will allow us to continue with this complement into the future. This stability has had the important consequence that in 1983 NASA was able to hire almost 600 recent science and engineering graduates. With the civil service complement we are proposing for FY 1985, we hope to be able to hire several hundred new science and engineering graduates next year as well. There is no doubt whatsoever that our ability to bring in so many new people will have a profound, positive influence on the future of NASA. The importance of this in-house capability has been well-recognized in many studies, including the recent one carried out by the Office of Science and Technology Policy under the chairmanship of Dr. David Packard. This study explicitly recognized the importance of healthy Federal laboratories to the economic health and national security of the U.S., and we endorse and support its recommendations.

Conclusion

Mr. Chairman, I have attempted to provide you and the Members of the Committee with a short overview of the Administration's proposed FY 1985 space program for NASA. I believe that it is an excellent program that will continue to ensure our Nation's leadership in space in the coming years. The program also provides a new vision for the future which is both realistic and farsighted. I solicit your assistance and leadership in effecting the program that I am presenting today.

Mr. Chairman, I will be pleased to respond to any questions that you and other Members of the Committee might have.

National Aeronautics and Space Administration
BUDGET SUMMARY
(dollars in millions)

	FY 1983	FY 1984	FY 1985
RESEARCH AND DEVELOPMENT			
Space Station ^{a/}	(4.0)	(14.0)	150.0
Space Transportation Capability Development	415.5	431.7	361.4
Physics and Astronomy	470.3	567.6	677.2
Life Sciences	55.7	58.0	63.3
Planetary Exploration	186.4	217.4	296.9
Space Applications	347.7	291.0	344.1
Space Science and Applications	1061.0	1134.0	1371.5
Technology Utilization	9.0	9.0	9.5
Aeronautical Research and Technology	280.0	302.3	342.4
Space Research and Technology	124.5	137.0	150.0
Tracking and Data Advanced Systems	13.4	14.2	15.3
TOTAL RESEARCH AND DEVELOPMENT	1902.5	2028.2	2400.1
SPACE FLIGHT, CONTROL AND DATA COMMUNICATIONS ^{b/}			
Shuttle Production and Operational Capability	1725.8	1649.3	1465.6
Space Transportation Operations	1421.7	1452.0	1330.0
Space and Ground Network, Communications & Data Systems	485.5	674.0	795.7
TOTAL SPACE FLIGHT, CONTROL & DATA COMMUNICATIONS	3633.0	3775.3	3600.3
CONSTRUCTION OF FACILITIES	103.5	155.0	160.0
RESEARCH AND PROGRAM MANAGEMENT	1197.4	1258.0	1331.0
TOTAL	6836.4	7217.5	7491.4
Outlays	6663.9	7068.2	7370.0

^{a/}In FY 1983, the Space Station Activity was included in Space Transportation Capability Development. In FY 1984, \$6.0 million was included in Space Transportation Capability Development, \$2.0 million in Space Science and Applications and \$6.0 million in Space Research and Technology.

^{b/}Prior to FY 1984, these programs were included in the Research and Development appropriation.

^{c/}Includes \$20.0 million for proposed pay raise supplemental.

Figure 1

National Aeronautics and Space Administration
FY 1985 BUDGET MULTI-YEAR ESTIMATES
 (millions of dollars)

	FY 1984	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989
RESEARCH AND DEVELOPMENT						
Space Transportation System (Capability Dev.)	431.7	511.4	730.8	1742.2	2289.0	2683.0
Space Science, Applications & Technology	1280.0	1531.0	1735.0	1818.0	2048.0	2086.0
Supporting Space Activities	14.2	15.3	16.2	17.1	18.1	19.0
Air Transportation	302.3	342.4	368.0	381.0	406.0	419.0
Total R&D	<u>2028.2</u>	<u>2600.1</u>	<u>2850.0</u>	<u>3958.3</u>	<u>4755.1</u>	<u>5209.0</u>
SPACE FLIGHT, CONTROL & DATA COMMUNICATIONS						
Space Transportation System	3101.3	2804.6	2774.2	2079.8	1674.0	1616.0
Supporting Space Activities	676.0	795.7	778.8	772.9	781.9	781.0
Total SPCDC	<u>3775.3</u>	<u>4600.3</u>	<u>3553.0</u>	<u>2852.7</u>	<u>2455.9</u>	<u>2397.0</u>
RESEARCH AND PROGRAM MANAGEMENT						
Space Transportation System	453.2	473.8	480.9	486.3	493.5	500.5
Space Science, Applications & Technology	443.0	479.5	486.7	492.0	499.2	506.5
Supporting Space Activities	61.5	63.3	64.3	65.0	65.9	66.9
Air Transportation	300.8	314.4	319.1	322.7	327.4	332.1
Total R&PM	<u>1258.5</u>	<u>1331.0</u>	<u>1351.0</u>	<u>1366.0</u>	<u>1386.0</u>	<u>1406.0</u>
CONSTRUCTION OF FACILITIES						
Space Transportation System	61.3	31.2	15.0	15.0	15.0	15.0
Space Science, Applications & Technology	12.0	8.3	20.0	20.0	20.0	20.0
Supporting Space Activities	58.2	90.2	75.0	75.0	75.0	75.0
Air Transportation	24.0	30.3	50.0	50.0	50.0	50.0
Total Conf	<u>155.5</u>	<u>160.0</u>	<u>160.0</u>	<u>160.0</u>	<u>160.0</u>	<u>160.0</u>
AGENCY TOTALS						
Space Transportation System	4047.5	3821.0	4000.9	4323.3	4471.5	4814.5
Space Science, Applications & Technology	1735.0	2018.8	2241.7	2330.0	2567.2	2614.5
Supporting Space Activities	807.9	964.5	934.3	930.0	940.9	941.9
Air Transportation	627.1	687.1	737.1	753.7	777.4	801.1
TOTAL	<u>7217.5</u>	<u>7491.4</u>	<u>7914.0</u>	<u>8337.0</u>	<u>8757.0</u>	<u>9172.0</u>

Figure 2

LIMITED R&D FUNDS MAY AFFECT UNIVERSITIES

Chairman DOMENICI. Senator Gorton, what I decided to do was to put these two witnesses on together, even though they were separate, and then we would question them as a panel, and then we will do the other two. I only have a couple of questions and then I will submit seven or eight in writing for each of you.¹

Dr. Keyworth, let me ask you how your office operates with reference to R&D going on in the Government. Let me give you an example.

For years the defense part of this R&D has had an effort with many universities, where some have been doing research for either the Army or the Air Force, or combinations, for as long as 30 years, and they have developed an institutional capability to service. Within the last 6 or 8 months, it has come to my attention, not only in my State but in many States, that almost unannounced the departments of the military come along and say this year you may not have this work, we are going to let everybody in the country decide who might get it. They may give us a little better price, and we may not have this \$5 million research program that has been ongoing for 8 or 9 years.

Now, I am not presently critical of it, although what I know, I will be. I am not asking you to pass judgment. I am asking whether you are aware of that kind of thing and whether the ramifications for good basic research for our country, continuity, development of universities and their faculties, student development, whether that is all taken into consideration when these kinds of decisions are made or not?

Dr. KEYWORTH. Mr. Chairman, first, in general, we certainly are aware and intimately tied to, for that matter, the policymaking and execution functions of each agency. Specifically, what you described is a problem that has been of some concern to me for sometime and dates back to the introduction of the Mansfield amendment more than 10 years ago that altered the course of DOD support for university basic research, limiting it to specific weapons systems.

I do feel that the Department of Defense could and should pay far more attention to the supply of talent and access to that talent.

The pressures of the President's defense modernization program have definitely placed a tremendous stress on limited R&D funds, especially limited basic research funds. I basically sympathize with the concern that you have described and think that this is a problem that we will have to work on in years to come.

DISMANTLING UNIVERSITY PROGRAMS COULD BE COSTLY

Chairman DOMENICI. Well, I appreciate your saying it that way because it appears to me that it is one thing to say we can get this \$5 million ongoing research project into some small engineering company or medium-sized one, and they will do it for \$4,722,000. The issue is not just the \$278,000 savings. The issue is what are the fringe benefits to the United States of having universities able to develop their faculty and their capability, and institutionally they

¹ See p. 520.

may be around where that other company may then find something else. It appears to me it is not the big companies that are getting these jobs. We want small entrepreneurs, but in basic research it is also dangerous to shift from continuity to something speculative that may not be there after 2 years of reasonable profit or even lack of profit. They go away or they get into something else. Then they will come back to a university that has already lost its lab capabilities, probably got rid of 10 or 12 good faculty members and 50 or 60 students that were doing the work in either post-doctorate or doctorate work. And what will happen, you know, we are a great powerful country, we will not necessarily know that item by item, but I think over the long run it is very dangerous if we have not analyzed it, and I would only mention it to you because it came as a surprise to me. In fact, I was told by the defense people that it was part of a new law. No law is passed without some of us people like me, in particular, knowing about it. But I could not believe any law had been passed that mandated the military to put all these university contracts out to bid. It turns out it is not a law, it is an effort by a department head with some justification to get a better price.

So I appreciate it if you would continue to look after it. You could lose more in 3 or 4 years here than the gain you are going to get with the NSF getting a couple million dollars a year. I mean that is nothing compared to dismantling 10 or 12 major university programs that have been at it for 10 or 15 years.

DIVERSE ROLES FOR INSTITUTIONS SUPPORTED

Let me ask one other question. You talked about the Packard Panel on page 22 of your prepared statement,¹ and you were very generous in recapping Packard recommendations. I think there was one recommendation that you did not include, maybe it is interwoven in your testimony there, but I thought we had already gone through the battle of whether or not these major labs that had been developed originally as defense-oriented labs were going to continue to be diversified labs doing their defense work but also doing other work that is somewhat related that naturally fits, or that they have a capability administrationwise or otherwise to handle, and I thought we were well on the way to say that is what is making these labs vital and alive and capable of attracting the best people, and does not Packard suggest that we go back and single them in again and make them single purpose labs and strip off anything that is not within their single purpose?

Dr. KEYWORTH. Mr. Chairman, that was by no means the conclusion of the Packard Panel report. I think in fact they are firmly supportive of diverse roles for the institutions, but they emphasize very, very strongly that those roles should comprise an overall mission or set of missions for the institution. There is no reason, for example, that a laboratory such as Los Alamos should not pursue both defense research, basic research, reactor safety, and a host of other possible major missions. But what disturbed them—and for that matter disturbs me and the administration—is the lack of a

¹ See p. 451.

clear mission in many of these—many of these institutions that possess so much talent that we badly need today.

The whole objective was to use the talent and resources more effectively for the primary challenges that we face today.

INTEGRATE LABORATORIES, UNIVERSITIES, AND INDUSTRY

Chairman DOMENICI. My last observation there and then I will yield to the two Senators that are here.

Frankly, I think one of the main problems we have got is you capture what really exists in these labs by way of information and piecemeal discoveries. You will have a lab that is primarily defense-oriented that has made some enormous breakthroughs but nobody knows about it because they are related to the physics and mechanics of building weapons, but physics, the truisms of physics do not apply only to military hardware, they apply period. And I think one of the toughest things we have got is to drag out of these labs those things that have application, where there is a huge lag time between the discovery and the application of the breakthroughs in the marketplace of America. I think we are making some headway, but it is one that surely requires your constant attention, from what I can tell.

I also find that it is done people to people more than anything else, and I do not know why we just cannot seem to get machines that plug it out. It is people going to visit labs, finding out what they are doing and, all of a sudden, finding out that applies to medicine, even though this is a lab that makes bombs. We find that most of it comes when people visit, listen and exchange, so I permit as much of that as possible until we are smart enough to do it another way.

Dr. KEYWORTH. Mr. Chairman, I think you have identified the key when you mentioned person to person. I think that is the solution for integrating the national laboratories into the rest of the national technology base and requirements. I think that is where we are trying to put primary emphasis. Integrating the labs, universities, and industry, I think is the key challenge before us today to address the threat from Japan and other nations.

Chairman DOMENICI. Thank you very much.

Senator Grassley?

FLEXIBILITY OF PROGRAMS AS TO FINANCING

Senator GRASSLEY. Thank you very much, Mr. Chairman.

My colleagues on this committee have heard me talk much about the mismatch between plans and projections on one side and what actually turns out in reality on the other side. I suppose most of my remarks have been directed toward the Defense Department, but looking at government in general, we find out that that is the situation. I suppose I must be frank in admitting that in the area of R&D, it is probably most difficult, as you plan ahead, to know exactly what the possibilities are, particularly in basic research.

But there is one area in which, as you look forward to having private sector cooperation and now even international cooperation in getting other countries involved with our programs, particularly space, where my question might be applicable and is applicable, to

what extent are your programs flexible enough so as you look to financing from the commercial sector and from other countries, and that does not materialize. Do you adjust your programs accordingly, or is it a case that if the commercial and the private sector, or the international sector, does not cooperate, that the programs will be either adjusted backward, or fully financed by the taxpayers at the Federal level?

FOREIGN PARTICIPATION INVITED

Dr. KEYWORTH. Senator, I think you have articulated exactly the reason why we need to pay far more attention than we have in the past to bringing in industry and international opportunities at the very outset, at the planning stage of a project.

The superconducting accelerator that I referred to, for example, offers us an exceptional opportunity today, at the very earliest stages, prior to a major commitment by our own Government, to bring foreign involvement into the designer stage, to establish that commitment and to establish a clear understanding at the outset. I think that is a key, it is a key to insure—that there will not be failed expectations down the road nor will there be failed opportunities.

Senator GRASSLEY. OK. I appreciate that part.

Do you want to comment?

Mr. BEGGS. I would add only this. The programs that we have run in NASA over the years, which have invited international cooperation and collaboration, and that includes almost every major program that NASA has had in 25 years, have been based on the ability to do the job within the NASA budget. That is they do stand alone. However, they invite foreign participation from the point of view of augmenting those programs, of enhancing them from a scientific point of view, and of contributing additional hardware which can, in essence, broaden what we do. We have found over the years that that cooperation, that collaboration, has added immeasurably to the programs.

In the first place, we have no monopoly on brains in this country so that the addition of foreign scientists, foreign engineers to the program has made it possible for us to do far more and with greater understanding. Perhaps, more important than that, however, has been the fact that by doing them in an international way, we enhance an exchange. Now, there have been a number of arguments made lately that that exchange has worked mostly to the disadvantage in that it has resulted in technology transfer abroad. I might say that many of our programs have resulted in significant technology transfer from Europe and other countries to the United States. In short, we have learned too.

So long as we maintain a control over our programs and are definite and assured in our objectives, I think we can encompass and effect very, very large international cooperation which is well controlled and which benefits both sides, and benefits very significantly.

Senator GRASSLEY. OK.

Then you do feel, in conclusion, that your programs are flexible enough so that if that income from that cooperation, both commer-

cial and international, does not materialize, then the programs are adjusted accordingly?

Mr. BEGGS. Yes, sir. But I do think that we can, indeed, have that cooperation, if we want it.

Senator GRASSLEY. That is all.

Chairman DOMENICI. Senator Chiles.

JAPANESE MAKING GREAT STRIDES WITH THEIR SUPERCOMPUTERS

Senator CHILES. Dr. Keyworth, I have read recently where one of our recent Nobel Laureates, an expert on supercomputers, Dr. Kenneth Wilson, said the Japanese are putting \$100 to \$200 million into supercomputers per year for 8 years. My understanding, as I recall it last year, it was \$6 million. This year we have upped it to \$20 million.

How in the world are we going to be able to compete on that basis. Are the Japanese not making big strides now with their supercomputers?

Dr. KEYWORTH. Senator, first, yes, the Japanese are making great strides with their supercomputers, and they are posing to us the first real challenge in this area that we have ever confronted. We are by no means beaten as our analysis clearly demonstrates. However, we have devoted an enormous amount of time to this in preparation for the 1985 budget and, in fact, the program across several different agencies involves much more than the \$20 million that you—

Senator CHILES. How much more?

Dr. KEYWORTH. The total, if we count—\$30 million in the Department of Energy; \$95 million in the Department of Defense for artificial intelligence and large-scale computers; in NOAA \$9 million; \$20 million in National Science Foundation total. I am not, however, claiming that this sum corresponds or is our answer to exactly what Dr. Wilson was proposing. The fact is I think he has selected a round number. He could have selected 10, 100 or a billion. Probably any one of those numbers would have satisfied the requirement for being round.

What we have done is to try to insure that we have clear levers within the academic community and within the Federal laboratory system to expand the technology base that will allow us to maintain our leadership in supercomputers and to even far better utilize this capability. We have placed particular emphasis on training of talent to both utilize supercomputers and to support their rapid advances. The great designer, Seymour Cray, has commented that, yes, he can build computers today with 16 or more parallel processes, essentially parallel brains, but that we have not yet learned how to use two. We have to address this technology, we have to develop a stronger base as well as stronger access before we can expect to accelerate our capability.

We have done what we think is most effective, and I think we will be taking even larger steps in future years. But they must be very carefully thought out, not just round numbers selected as arbitrary units.

Senator CHILES. Well, are we working in coordination and, Dr. Beggs, I would be happy to have you—

DEVELOPMENT OF HIGH SPEED PROCESSES SUPPORTED

Mr. BEGGS. I would add just this one thing, Senator Chiles. The NASA program has generally supported the development and continued progress in high speed, high data rate computers. There is one in this budget that I think the committee should take note of and that is the continued development of a numerical aerodynamic simulation which is out of the Ames Research Center, and which has in the sense that I think Dr. Keyworth was referring to, the ability to use these high speed computers. And this will use the most advanced of the Cray computers in an attempt to do simulation of fluid dynamics problems which will have broad application across the board but which, of course, we are interested in because it enables you to do wind tunnel work on a computer in effect. In other words, it is a kind of a digital wind tunnel, if you will, and those expenditures will contribute in a very major way to the continued development of these high speed processes.

Senator CHILES. My understanding is that one of the inducements necessary, of course, is that there be some orders out there so the companies will know if they are getting in the race or, if they are going to involve themselves, that there are going to be some orders at the end of the process.

What is the Government doing to sort of assure that?

Dr. KEYWORTH. We have two things. First, we have a coordinating committee of all agencies to try to assemble the overall Government requirements. If you wish, a coordinated buy so that companies for whom a single computer represents a reasonable fraction of their annual sales, can plan ahead, and we are trying to respond to that. But I think more important is this question of access. We are trying to increase the access primarily to university researchers to this very powerful tool for a numerical simulation. Both together, I believe, are meeting the kind of strong incentive that our supercomputer developing industries have told me that they require.

GOVERNMENT'S ROLE IN SUPPORTING BIOTECHNICAL RESEARCH

Senator CHILES. I note Dr. Keyworth, that the President's 1985 budget request includes increased funding for basic research and biotechnology in the U.S. Department of Agriculture, and some for the National Science Foundation for physiology and cellular molecular biology.

In the 270-page study, the new plant genetics prepared by William Choulis & Co., an international seed and plant consulting firm, concluded that innovations in plant genetics could add \$5 billion a year to valued major crops over the next decade.

Knowing that this has been the area in which we made the most progress in regard to continued productivity, what do you see as the Federal Government's role in supporting biotechnical research?

Dr. KEYWORTH. Senator, in one short note, a very large and substantial role. Let us remember that it was the U.S. research, primarily from the National Institutes of Health, that developed the modern biotechnology, developed recombinant D&A technology. But Japan again threatens to put this technology to work faster than does the United States. We are trying to address that, and the

new program, in which Department of Agriculture which represents a significant cultural change in the way agriculture research is carried out, is a step. We must carefully look at areas of application—agriculture being one, medicine being another, industrial chemicals being another—and insure that we are coordinating the kinds of research that we do primarily in NIH with the potential users in industry. I think an important thing to look at is whether we are meeting the demand in our university supported research for training of new talent.

Senator CHILES. Should we just be advancing basic research or should we actually be going further than that?

Dr. KEYWORTH. In my opinion, in general, we should be supporting basic research. Basic research is a broad category, but if your question is whether we should be directly stimulating the incorporation of new biotechnology into specific crop areas, I do not think so. We did that in the 1970's in energy research, and it was remarkably ineffective. I think we run the same threat here.

But I am not answering your question ideologically. We have a tough challenge before us. We could lose this industry and we need to work closely in partnership with industry and the marketplace to stay ahead.

Senator CHILES. That is all.

Chairman DOMENICI. Did you have any you might want to submit in writing?

Senator CHILES. I might have some, yes.

Chairman DOMENICI. Senator, do you have any further questions?

Senator GRASSLEY. No.

Chairman DOMENICI. All right.

We are going to submit about 8 or 10 to both of you.¹

DOD HAS LITTLE INTEREST IN SPACE STATION

Mr. Beggs, let me ask you, to what extent is the Department of Defense interested in the space station?

Mr. BEGGS. Other than observing what we are doing, they apparently have very little interest in it, Mr. Chairman.

Chairman DOMENICI. So that any notion that if you did not do it, they would have to do it, it has been written about is not true?

Mr. BEGGS. I think that is correct. Obviously, everything that we do in space research and technology development is available to the Department of Defense if they want to use it. Indeed, they have benefited by and picked up various pieces of our technology and our development effort over the years. They, of course, use most of the kind of satellites that have come into common use for military purposes, communication satellites, meteorological satellites, navigational satellites, surveillance satellites, what have you. All of that technology had its origin in the space program. So to the extent that we will develop new technologies in the construction of the space station, and we will, the Department of Defense would pick them up and use them. As a matter of fact, as you know, that

¹ See p. 520.

it is required by the statute that created NASA that we pass on to the Department of Defense anything that we consider has military application; and, we take that responsibility seriously and will continue to do it.

Chairman DOMENICI. Did I improperly refer to you—you are not a doctor, are you?

Mr. BEGGS. No, sir.

Chairman DOMENICI. We cannot call you master or anything?

Mr. BEGGS. No.

Chairman DOMENICI. Just mister?

Mr. BEGGS. Just mister.

Chairman DOMENICI. All right. Thank you very much. I have no further questions.

SHUTTLE CAPABLE OF SERVING MILITARY MARKET

Senator CHILES. On that note, the Air Force has indicated that if they want a solid propellant rocket or something, there is still concern as to whether the shuttle can meet their needs. I thought that the whole basis of what we were doing was putting a lot of money in the shuttle because we were going to be able to carry out a military mission in that.

What is your feeling?

Mr. BEGGS. Our feeling is that the shuttle is a completely capable machine to serve the military market, and we stand ready to do so. There have been a number of comments to the effect that there should be a backup. It may well be that—

Senator CHILES. Well, is not a backup another shuttle?

Mr. BEGGS. A backup is—well, let me make a couple of comments on that, if I may, Senator Chiles.

First of all, we have never backed up any space launch system that I know of. In the past, of course, we had three different expendable launch systems in the Titan, the Atlas series and the Delta series, launch vehicles, and we did not back up any of them. That is just plain fact. However, the comment has been made that the shuttle is a manned system and, therefore, has some special vulnerabilities connected with it. My view on that is we have gone back and looked at the history of manned space flight as compared to unmanned space flight, and we find that you can find very little difference in the availability and reliability of the manned vehicles as opposed to the unmanned. Quite the contrary. Manned vehicles have been down for shorter periods of time due to technical problems than have the unmanned expendable launch vehicles. Some of the expendable launch vehicles were down for over 1 year and, as a consequence of being down for over 1 year, the payloads had to find other ways of being launched or were not launched at all, whereas the longest period that we have been able to find in our history where a manned system has been down was in the case of the Apollo after Apollo 13, when we had, as you will recall, very bad trouble. It confirmed me as a triskaidekaphobic and we were down for 6 months after that. That is the longest.

SHUTTLE DERIVED EXPENDABLE LAUNCH VEHICLE

But there is a concern, I understand, in the military that there be a backup to the shuttle. If such a backup is carried on, I would hope that they would look very carefully at a shuttle-derived expendable launch vehicle because a shuttle derived makes eminent good sense. It would be the least expensive long-term option because in buying the big solid rocket boosters and making an expendable vehicle out of them, they would be contributing to cover the overhead on the overall system, and you could choose the same launch facilities that you use for the shuttle as well as maintain only one standing army of technicians and support people to launch those vehicles.

So, from the long term, that makes a lot more sense than bringing along a separate system in its entirety, and it should if they want and need a backup, it should provide more than adequate support in that area plus having the unique virtue of having large growth. You could grow such a system up to capabilities just to launch several hundred thousand pounds in lower Earth orbit.

SHUTTLE BACKUP NOT REQUIRED

Senator CHILES. Your feeling is right now that a backup is not needed?

Mr. BEGGS. I do not believe a backup is required, no, sir. I think the shuttle is adequate to the mission, and we have brought the system along very well in the last 3 years since we flew the first one, and we are moving very rapidly to the point where it will have all of the capability that we promised back in the early seventies when we laid it down, that is 65,000 pounds into a lower Earth orbit on inclinations of—well, around $28\frac{1}{2}$ degrees or even more, and something less than that on the higher inclinations. But we are well on the way to getting that.

Chairman DOMENICI. Dr. Keyworth?

DOD SUPPORTS RETAINING ELV CAPABILITY

Dr. KEYWORTH. To provide some variety, I would like to add another perspective.

I have worked very closely with the Department of Defense on this issue, and I think the issue is more of a complementary one than it is backup. We have invested tens of billions of dollars in the development of expendable launch vehicles, and combined with the unique and powerful capabilities of the shuttle, they offer us a broader program than the one that is shuttle based alone. It is the ability to be flexible, both in time and in payload, that has heavily motivated the Defense Department to support retaining an ELV capability. It can also represent us by taking a careful look at what will soon be the—

Senator CHILES. I do not get a lot of comfort out of that. You know, we are told when we started to develop the shuttle we were going to be able to take care of the missions, that we are going to spend the money to do this. I have not heard anything about the necessity of having these complementary programs. And now we get the shuttle and it is doing everything that we expected it to do.

And now we are told, wait a minute, we want to have these complementary programs at the same time.

Why did somebody not tell us about that when we were taking testimony on the shuttle itself? Nothing was said about it at the time as I recall and I think I followed the shuttle pretty dadgum closely.

Dr. KEYWORTH. Mr. Senator, 12 years ago, in 1972, the first decision was made to proceed with the shuttle. The Soviet program has responded during that time in a way that was totally unpredictable to even the most clairvoyant of us. The challenges that our defense faces today were not predictable 12 years ago and I think it is just plain simple education to look at the changes that have occurred and to try to react most responsibly.

Chairman DOMENICI. So what is the final on this? Is military going to make recommendations in this regard, to your knowledge, Dr. Keyworth?

Dr. KEYWORTH. The military has proposed it to the President, and I believe the President will be highly supportive of this and will continue to be worried about the need for a complement as I term it.

Chairman DOMENICI. OK.

Shall we leave on a complimentary note or not?

Senator CHILES. Complimentary.

Chairman DOMENICI. Thank you very much. It is good to have you here.

All right, Dr. Carey, executive director of the American Association for the Advancement of Science, and Dr. Gibbons, Director of the Office of Technology Assessment.

We are going to start with you, Dr. Carey.

STATEMENT OF WILLIAM D. CAREY, EXECUTIVE OFFICER, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Mr. CAREY. Thank you and good morning. It has been a very interesting morning.

I have a very short statement, Senator, but I can boil it down even more.

SCIENCE INVESTMENT GIVEN SPECIAL PRIORITY

I think that the budget that the President has sent up for research and development is robust and rather exceptionally so considering the deficit problem that the committee and the executive branch are facing. Next to national defense, it is clearly shown that investment in science has been given a special priority.

Now, basic research, of course, is what stands out in the nonmilitary part of the R&D budget, and this, of course, is what makes or breaks the discovery process. It has been given rather conspicuously favored treatment relative to other claims on the budget. If this kind of growth, such as we see for the National Science Foundation 2 years running, is acceptable to the Congress, and if the investment momentum can be sustained through the decade, it ought to go a long way to secure the U.S. position in world science in the years to come. But you are going to have to stay with it to get that

result. This is a very significant policy objective and I hope that the Congress and the President can see eye to eye.

STRUCTURE OF BUDGET AUTHORITY FOR R&D

I would like to devote most of my short time here to the structure of budget authority for research and development as it has taken shape over the 3 fiscal years, 1983 to 1985. The movement in budget authority is very dramatic from 40 billion in fiscal 1983 to a stunning \$54 billion in fiscal 1985. Now that is very steep growth. Even without figuring in an increase of the National Institutes of Health which somehow has not been increased in this budget, if the curve of growth should be extended at these rates, it would mean a doubling time for Federal research and development of about 4 years.

Now, that is not realistic. I do not think it is sustainable and it makes us wonder at what level and by when the shakeout in research and development will occur and the trend line normalized.

To start with, the key factors are the defense and the NASA numbers because, together, they eclipse the rest of the 1985 budget estimates for R&D with—close to 75 percent of requested budget authority. When you realize that a number of new R&D starts are embedded in the defense and NASA figures at modest initial cost, and that these will grow up to be big ticket items in succeeding budgets, you have the prospect of a Federal budget for R&D, a year or two or three out, in which defense and space easily would take four-fifths or more of the total Federal funds for R&D. So the issue, I suggest, is whether the Nation's scientific and technical resources are on the way to being overconcentrated in areas that, essential as they may be, will contribute relatively little to the national economy or to international economic competitiveness.

So I compliment the administration in many ways for the robustness of the R&D budget, but I think it has structural problems within it that cause us to raise questions about the propositions on which the budget has been built.

Again, if you take the 3 years, 1983-85, what we see in terms of the movement, and your charts show this, is that national defense R&D rises in constant dollars as we figure it by 36 percent and nondefense R&D barely moves at all with a token increase of what we figure to be 2.5 percent. I have heard 4 percent here this morning. It depends on how you do it, I guess. But the pattern is important, and the pattern says a great deal about the priorities that underlie this R&D budget. It gives a negligible priority to the use of Federal resources to reinforce the broad base of U.S. technology, innovation, and economic resurgence.

Now, it is true that there has been and is encouraging growth in the private sector for proprietary R&D, and if you put together the Federal and the industrial sectors for next year, you are talking about an R&D effort in aggregate terms of well over \$100 billion a year, and that is most impressive. But there are also cuts in the Government's budget for applied research and development throughout the civilian agencies, including the Energy Department.

UNIVERSITY-BASED R&D

Now, let me move along. On the bright side, university-based R&D, research mainly has been treated very well, and the administration is on strong ground in claiming that it has stuck to its guidelines and its policies there. But when you look at universities, money is not the whole answer to advancing university-based science. No matter how generous the flow of research funding to our universities, the productivity of scientists depends no less on the freedom to report and publish their ideas and results and to expose them promptly to peer scrutiny for confirmation. If the administration continues on its present course of imposing prior clearance and restraints on the disclosure of the results of unclassified research, in the name of shielding our science from Soviet bloc imitation, the good that can be done through Federal funding to universities can be smothered by an officious bureaucracy.

Government and science have had a 40-year partnership based on mutual trust and a minimum of Government control. Now we have the prospect that some leading-edge universities will not be willing to accept Government funds for unclassified research if they have to go down on their knees for permission to publish and discuss their findings.

NO INCREASE FOR SCIENCE EDUCATION

On another point, gentlemen, what I find baffling in this budget, given the parade of seven highly publicized reports on the decrepit state of science and math education in our schools, is the failure to provide an increase for science education. I was looking to my right here at these pie charts on percentage shares of R&D funding.¹ You know, there is not a slice in any of those charts for education. And without the investment in education, you are not going to have very good science or very many scientists or even a literate public. It may well be that there is no slice there because the money is invisible.

In the budget of the Science Foundation, the request for science education is \$75.7 million, about the same as last year's appropriation. Most of it goes to precollege education where it ought to go. But it is very strange that science education is kept on hold while we are forcing the pace of R&D spending as these curves show, and we are calling for industrial innovation. You do not solve the problems of science education by throwing money at it at random, but I think it is clear that the States and the Federal Government have to share the cost of reinvestment in our precollege educational base, and it is too bad to see another year go by, after seven reports, while we put things like questionable space stations ahead of shoring up science education.

FUTURE OF SCIENTIFIC COMMUNITY UNCERTAIN

Now, the 1985 budget totals are very impressive in their aggregates, but they do not assure the scientific community of a rosy future, and the scientific community has to hear this. We may not

¹ See p. 426.

see such husky provision for science again in the budget, and there are two reasons. The first is the predicament of mounting budget deficits. Revenue actions may be part of the solution, but expenditure control has to be the other part. And in that situation, and if defense and space continue to increase their shares of the R&D budget, it will be very tough to fund discretionary science at growing levels or even to make good on the levels proposed in this budget for fiscal 1985.

The second factor for uncertainty involves the family of very large-scale technological commitments that are now being envisaged in these R&D numbers. The combined costs of very large projects on which small initial payments are being made could add up to many tens of billions of dollars stretched out over the rest of this century.

Now, in the face of the finite limits on both the revenue and expenditure side of the budget, these massive built-in costs, if the decisions are made, surely will have a substantial displacement impact upon resources for general science. You could have a squeeze, and a severe squeeze, all the way through the system at the same time as other advanced countries are moving ahead of us.

So my point here is that we have a pincers problem coming at us--the convergence, on the one hand, of deficit management policy, which we have to have and, on the other, costly emerging technological targets with high displacement implications for science. So while this is a great budget and a robust budget for research and development, we cannot take our eyes off the problems out ahead that do not so readily meet the eye.

Thank you, gentlemen.

Senator GRASSLEY [presiding]. Thank you, Mr. Carey.

[The prepared statement of Mr. Carey follows:]

Statement by

WILLIAM D. CAREY

Executive Officer

American Association for the Advancement of Science

U.S. Senate Committee on the Budget

February 27, 1984

Mr. Chairman:

Thank you for inviting me to comment on the President's 1985 budget proposals for scientific research and development.

I consider it a robust budget for R&D, and decidedly favorable in the light of the deficit dilemma. It seems clear that the Administration has decided that, next to national defense, investment in science and technology rates special priority. Yet the budget for science, on the other hand, is neither open-ended nor a case of "anything goes." It is constructed on a selective rationale, whether one agrees with it all or accepts its total orientation.

The area of basic research, which is the center of the discovery process, has been given noticeably favored treatment relative to other claims on the budget. We see the National Science Foundation coming in with a 14 percent increase for research on top of last year's 18 percent buildup. If this kind of growth is acceptable to the Congress, and if the momentum of investment can be sustained through the decade, it should go a long way to secure the position of the United States relative to world science, in the years to come. That, I think we can agree, is a very significant policy objective, and I hope that the Congress and the President see eye to eye on this matter.

It's worth a moment to look at the structure of budget authority for research and development as it has taken shape over the three fiscal years 1983 to 1985. The general movement, measured in budget authority, is dramatic,

from \$40 billion in fiscal '83 to a recommended \$54.3 billion for fiscal '85. This is very steep growth, even without a further requested increase for the National Institutes of Health, and if the curve were to be extended at this rate in the future it would mean a doubling time for federal R&D of about 4 years. That is hardly realistic, and probably not sustainable, but it causes us to wonder at what level, and by when, the inevitable shakeout will occur and the trendline normalized. To begin to focus on that question it's obvious that the key factors are the Defense and NASA numbers, because together they eclipse the rest of the 1985 budget estimates for R&D with over 70 percent of the requested budget authority. It must be realized that a number of major new R&D starts are imbedded in the Defense and NASA figures at modest initial costs, and these will inevitably be big-ticket items in succeeding budgets, if approved. So we have the prospect of a total future federal budget for R&D in which defense and space could amount to four-fifths of the total. The issue that this raises is whether the Nation's scientific and technical resources are on the way to being overconcentrated in areas that will contribute relatively little to the national economy and international economic competitiveness, however helpful they may be to enhancing our defense and space capabilities. While I consider it to be in order to compliment the budget makers on a robust total R&D budget, the size of that budget may mask serious consequences flowing from this distribution of resources, and it becomes necessary to question the propositions that lie behind the impressive numbers.

Again taking 3 years '83-'85 for purposes of comparison, what we see in terms of budget authority is that national defense R&D rises in constant dollars by 36 percent while nondefense R&D barely moves at all with a token increase of 2.5 percent. This pattern does say a lot about priorities as the Administration defines them but, save for the handsome increase for basic

research, it gives a negligible priority to the use of federal resources to reinforce the broad base of U.S. technology, innovation, and economic resurgence. True, there is encouraging growth in private sector, proprietary research and development, but cuts in applied research and development in the Department of Energy, the Bureau of Standards, NOAA and elsewhere may reduce our ability to transfer the results of basic research into commerce. There is, incidentally, a certain irony in the Administration's justifying a \$20 billion project for the space station on the basis of its commercial potential (which is very speculative) while cuts are made in other agencies on the rationale that their work is more appropriate for industry.

On the brighter side, university-based research has been treated very well; and the Administration is on strong ground in asserting that basic research funding directly to universities will have grown by nearly 50 percent since the Administration came into power. Since we rely on our research universities to advance scientific discovery through basic research, this policy is both wise and necessary, and the Reagan Administration has been consistent in pursuing it.

It must be said, however, that money is not the whole answer to advancing university-based science. No matter how generous the flow of research funding to our universities, the productivity of scientists depends equally on the freedom to report and publish their ideas and results and expose them promptly to peer scrutiny for confirmation. If the Administration continues on its present course of imposing prior clearance and restraints on the disclosure of the results of unclassified research, in the name of shielding our science from Soviet Bloc imitation, the good that can be done through federal funding can be crippled by an officious bureaucracy. Government and science have had a 40-year partnership based on mutual trust and a minimum of government

control. We now face the prospect that some leading-edge universities will not be willing to accept government funds for unclassified research if they must go down on their knees for government's permission to share their ideas and findings with colleagues. As the late Senator McMahon put it when the Atomic Energy Act was up for passage, "There are two approaches to the problem of security. One is security by concealment. The other, and the better, is security by achievement." He said it all, but our memories are short.

As one goes through the budget for R&D, there are pluses and minuses balancing out. One striking plus is the nearly 13 percent increase in budget authority for EPA, signalling a much-needed rebuilding of the scientific base for regulatory action in that agency, although environmental research keeps going down in NOAA, the Geological Survey, and Interior. On the minus side is a nearly level budget for civilian R&D in the Energy Department, within which basic research rises by 13 percent in budget authority and several new accelerator starts are provided for, which must mean further cutbacks in applied research, development and demonstration programs related to energy technology. It is hard to make much of the budget for the National Institutes of Health other than to conclude that the increase of only 2 percent is another ploy in the annual contest with the Congress.

What is particularly baffling, given the parade of highly-publicized reports on the decrepit state of science and mathematics education in our schools, is the failure to provide an increase for science education. In the budget of the Science Foundation, the request for science education -- \$75.7 million -- is virtually the same as last year's appropriation. Most of this money is to go for precollege education, which is where it is needed, but it seems very strange that science education is kept on hold while we are forcing the pace of R&D spending and calling for industrial innovation. I do

not believe in solving the problem by throwing money at it, but I think it is clear that the States and the federal government must share the costs of reinvestment in our precollege educational base. It is too bad to see still another year go by while we put things like speculative space stations and accelerators ahead of shoring up the quality of science education.

One more point needs to be made, as much for the benefit of the scientific and university communities as for the Committee. The 1985 budget totals for R&D are very impressive in their aggregates. But they give no assurance of a rosy future. We may not see such provision for science again, for two reasons. The first is the necessity for the President and the Congress to find a way out of the predicament of mounting budget deficits. Revenue actions may be part of the solution, but expenditure control will be the other part. In that situation, if Defense and Space continue to increase their shares of the R&D budget, it will be very tough to fund discretionary science at growing levels, or even to sustain the levels proposed in the 1985 budget. If universities, for example, take the recent increases as a signal that we are on an expansionary curve and build their plans accordingly, they could come to regret it. We are in a year-to-year situation, and the future is anything but clear.

The second reason for uncertainty involves the family of very large-scale technological commitments now being envisaged, such as the space station and space-based antisatellite defense systems. The combined costs of very large projects could add up to many tens of billions. In the face of finite limits on both the revenue and expenditure side of the budget, these massive costs will surely have a substantial displacement impact upon resources for general science. It could lead to a severe squeeze on the supply of scientists and engineers, on university-based research, and upon the support of the applied research that leads to innovation and economic strength, while other advanced countries continue to move ahead. My point is that we have a pincers problem coming at us -- the convergence of (a) deficit management and (b) costly technological targets with high displacement implications for science. It is not enough to celebrate one strong budget for research and development, to the exclusion of problems that do not so readily meet the eye.

Thank you, Mr. Chairman.

Senator GRASSLEY. Dr. Gibbons.

STATEMENT OF JOHN H. GIBBONS, DIRECTOR, OFFICE OF TECHNOLOGY ASSESSMENT, ACCOMPANIED BY T. F. ROGERS, DIRECTOR, CIVILIAN SPACE STATIONS ASSESSMENT, OFFICE OF TECHNOLOGY ASSESSMENT

Mr. GIBBONS. Thank you, Mr. Chairman.

I would like to submit my full statement for the record if that is appropriate.¹

Senator GRASSLEY. That is fine.

Mr. GIBBONS. It is not my purpose here this morning, Mr. Chairman, to speak to the overall science budget of the administration but rather, building upon a specific ongoing OTA assessment, to speak to an unusual new start, namely the request for commencement of work on the so-called civilian space station by NASA.

However, I would like to interject for Senator Chiles here, your interest in biotechnology and its commercialization, OTA has recently completed a rather comprehensive study of that issue, and I would be happy to send you a summary of that.²

Senator CHILES. I would like that. Thank you.

SPACE STATION ASSESSMENT

Mr. GIBBONS. Our assessment on the space station, Mr. Chairman, is fortunate in that we are being advised by an unusually broad and experienced advisory panel drawn from both within as well as from outside the traditional area of space expertise. I have appended to my full testimony brief biographies of those panel members for your interest.³

I want to underscore at the outset that the primary focus of our assessment is not whether or not a space station should be built, but what are the issues and options regarding the acquisition of additional capability for exploring and exploiting space.

I might add that one of the recent outputs of that assessment, Mr. Chairman, was an assessment of the Soviet Salyut program, the Soviet counterpart of the U.S. manned space program.

Now, at present, NASA appears to favor a large and sophisticated ensemble of elements that employ a great deal of new technology that is capable of supporting a fairly large human work crew. NASA estimates that the infrastructure's initial capital cost to the Federal Government could approach \$10 billion over the next 7 to 8 years, and the total capital cost might approach \$20 billion by the turn of the century. It seems to be in the nature of things today that, given the way that the Government acquires new high technology assets, the ultimate capital cost usually exceeds these initial estimates by a fair margin.

It is also important, of course, to keep in mind that with this capital investment must also come dollars for operations and maintenance and presumably for the cost of doing the things that we hope to do with any space station.

¹ See p. 493.

² See p. 552.

³ See p. 512.

On the other hand, circumstances under which any such infrastructure would be acquired are unusually dynamic. One might note that the Department of Transportation now has entered the civilian space area. The interest of our commercial-industrial sectors in the private development and provision of space infrastructure assets and services is growing, and some European countries have serious and growing interest in providing space infrastructure.

So, as a result, the net cost to the U.S. Government for this infrastructure that NASA currently envisages could be significantly lower than the figures I just gave you. The cost of the infrastructure that NASA proposes, rather than its particular capabilities or characteristics is what principally concerns space scientists and others concerned about the cost of research. There are very few scientific objectives whose horizon of accomplishment extends beyond, say, the next decade, that could not be better met by a more modest and less costly ensemble of infrastructure elements.

The major effect of NASA's proposed infrastructure program on space science is liable to be budgetary.

Now, let me put it as clearly as I can.

INFRASTRUCTURE OPTIONS

There is no single thing that can be called "the space station." There are, rather, a large number of potential space stations that could be made up of various combinations of such in-orbit infrastructure characteristics as on-orbit lifetime, volume in which to work, power, communications, local transportation, and so on. We provided in my complete testimony a listing of some combinations of infrastructure elements that have received considerable study. We point out their fundamental characteristics, the suggested needs that could be met with those capabilities, their capital cost, and the time in which they could be obtained. So this is a listing of a variety of options for so-called space stations, and they are appended to my full testimony.¹

Now, obviously, very useful capabilities can be obtained from infrastructure elements at costs to the Federal Government that are well below those which NASA is now considering, and, of course, the choice of the particular ensemble of infrastructure should relate directly to the space objectives which it is intended to serve.

FACTORS THAT COULD INFLUENCE COST

In OTA's view, it is impossible at this time to estimate the eventual cost of the infrastructure capability to the Federal Government for the reasons I have just enumerated, and let me mention a few of the factors that could have an important influence on this cost.

First of all, the total capability required, which can encompass a considerable range of cost differences.

Second, the extent to which already developed, tested, and paid-for technology is used rather than new technology with its higher development cost and its greater risk of cost overrun.

¹ See p. 506.

Third, the substitution, where feasible, of automated systems for the accomplishment of tasks previously undertaken only by human beings. The name of the game is to do things at less expense, and the real price is, of course, rapidly breaking for automated systems which in some cases, may be substituted for humans.

Fourth, the manner in which the infrastructure is acquired. For example, the extent to which NASA would challenge the space industry and take advantage of their present capabilities by issuing performance specifications rather than by continuing to issue detailed engineering specification and managing the acquisition process in detail.

Fifth, the effectiveness of NASA's efforts to persuade our private sector to develop infrastructure assets and services on their own and then provide them to the Federal Government, either through sale or through lease, at prices lower than could be achievable by the Government in direct action.

Sixth, the effectiveness of NASA's efforts to arrive at large-scale collaboration and related cost-sharing arrangements with other countries, as Mr. Beggs mentioned earlier this morning.

Finally, inasmuch as there is no objective, urgent external demand to obtain such an infrastructure, an approximate annual expenditure rate could be set so as not to burden the budget excessively in any one year.

Now, these considerations suggest that over the next year or two, at least as much attention should be given to identifying better processes, including the whole timing of the process by which the country sets about the development of space, as is given to any physical characteristic or physical capability that might be obtained in response to those needs.

SPACE-RELATED GOALS AND OBJECTIVES

Mr. Chairman, I think it is very important to appreciate that space infrastructure is simply that. It is infrastructure. Its availability would presumably allow certain new space-related goals to be addressed and objectives to be accomplished. But the hardware would be only a means to the achievement of those ends. The civilian space-related goals and objectives of the United States should be such as to command widespread attention; have great inherent humanitarian and scientific interest; foster the development of new technology; have relevance to global issues; prompt international cooperation; and involve major participation of our private sector so as to advance our economic prospects. But, over the past decade, the Government has not studied and articulated such a national agenda of goals and objectives. And for NASA to state that the infrastructure, or space station, could serve 107 different uses or interests, is an interesting shopping list, but they are hardly the kind of crisp, objective, and persuasive end uses that we should insist on being provided in explanation of the expenditure of the great sums and the use of outstanding talents called for.

NOT POSSIBLE TO JUDGE VALUE OF INFRASTRUCTURE ELEMENTS

In the absence of such carefully considered goals and objectives, and with the great uncertainties in the estimate of any infrastruc-

ture cost to the public, OTA concludes that it is simply not possible to judge objectively whether or not NASA's presently suggested infrastructure elements are truly appropriate and worth their substantial costs.

Unfortunately, we know of no broad and continuing serious study effort which could be used to see that the American public has the opportunity to consider and help initiate space-related activities that address important scientific, cultural, social, and political ends.

We first made this point almost 2 years ago, and we are pleased to note that Dr. Keyworth spoke to this important matter in testifying last month before the House committee that deals with NASA appropriations.

Whatever the judgment of Congress is regarding the administration's request for studies of the space infrastructure over the next 2 years, those 2 years should certainly be used by both Congress and the administration to see that the United States now decides upon and articulates again, in contemporary terms, its civilian space goals and objectives.

Finally, as we move beyond the initial exploratory period of space activities, and as we approach the so-called considered development of space, we should be careful, above all else, that we not get caught up in either fascination with or the details of exotic space technology. What these times now call for is not so much technical expertise, for we have that in abundance, but rather for vision, wisdom, reason, and sound judgment.

Thank you, Mr. Chairman.

Chairman DOMENICI. Thank you very much.

[The prepared statement of Mr. Gibbons follows:]

PREPARED STATEMENT OF JOHN H. GIBBONS, DIRECTOR, OFFICE OF TECHNOLOGY
ASSESSMENT, U.S. CONGRESS

Mr. Chairman, The Office of Technology Assessment is pleased to be offered the opportunity to testify before you today.

I am John H. Gibbons, the Director of OTA.

I am accompanied by T.F. Rogers, Director of the OTA civilian space stations assessment.

It is not my purpose here this morning to speak to the Administration's overall Science Budget request, but, building upon a specific on-going OTA assessment, to speak to an unusual RDT&E "new start:" a request for NASA to commence work upon a so-called civilian space station.

Introduction

Over the past year, discussion has quickened regarding the kind of "civilian space station", if any, needed to support our national interests in space. In our assessment, we are studying the issues related to the United States' obtaining any such space capability, the options open to the Congress and the broader context of our nation's civilian space future as it might be affected by the acquisition of any such infrastructure. Our assessment is fortunate in being advised by an unusually broad and experienced Panel, some from, but most from without, the space area. (I have attached a list of our Panel members, with a brief biography of each.) The products of this assessment that we have issued to date include this and some previous testimony, and the OTA Technical Memorandum "Salyut -- Soviet Steps Toward Permanent Human Presence in Space."

Let me underscore at the outset that OTA does not take a position on the desirability of any "space station." We do observe, however, that Americans will continue to go into space on the Shuttle and that the number of elements

of space infrastructure will increase. The primary focus of our assessment, therefore, is not whether a "space station" should be built, but what are the issues and options regarding the acquisition of additional capability for exploring and exploiting space.

Over the past few years, NASA has begun to focus on defining and obtaining the elements of a "space station". At present, NASA appears to favor a large and sophisticated ensemble of elements, employing a great deal of new technology and capable of supporting a fairly large human work crew. NASA apparently favors procuring this ensemble in what might be described as the "classical" NASA fashion. In round numbers, NASA now estimates that the infrastructure's initial cost to the Federal Government could approach \$10 billion over the next 7-8 years, with the total cost approaching \$20 billion by the end of the century. It seems to be in the nature of things today that, given the way that the Government acquires new high technology assets, the ultimate capital cost usually exceeds initial estimates, often by large amounts.

On the other hand, the circumstances under which any such infrastructure would be acquired are unusually dynamic. The Department of Transportation has entered the civilian space area; the interest of our commercial-industrial sectors in the private development and provision of space infrastructure assets and services is growing; and some European countries have serious and growing interest in providing space infrastructure. It should not be surprising, therefore, if the net cost to the United States Government for all of the infrastructure NASA currently envisions were to be significantly less than these figures.

Infrastructure Options

As Congress addresses this matter, it is fundamental to their consideration of the issues that they appreciate that there is now no single thing that can be called "The" space station. There are, rather, a large number of potential "space stations" that could be made up of various combinations of such characteristics as:

- o On-orbit lifetime,
- o Volume,
- o Power,
- o Communications,
- o Local transportation.

Each characteristic chosen would have a particular value selected from a wide range of options, and the selection should be made on the basis of a set of clearly defined objectives. Given the space technology now available, and that which has received extensive study, the number of personnel that could be accommodated range from, say, none to a score or more; the pressurized volume, from 0-10,000 cubic feet; the power available to users, up to 200 kilowatts; etc. Accordingly, the cost could be as low as \$5 million for a platform with the most modest of capabilities, to as high as hundreds of millions of dollars for a Shuttle Orbiter modified to allow its human crews to remain in orbit for extended durations, to even tens of billions of dollars for sophisticated, essentially permanent elements, that could support a large human crew engaged in many kinds of activities. We have prepared a listing of some combinations of infrastructure elements that have received considerable study, their fundamental characteristics, the suggested needs which their capabilities

could meet, their capital cost, and the time that it should take to obtain them. [See Attachment 1]

Let me give you three examples of the kinds of arrays of infrastructure that could be obtained in order to extend the human presence in space. (Although these examples are not to be found, as such, in the attached table, they draw upon the information contained therein.) I present them in the order of the increasing capability that they could provide, and of their increasing associated costs.

- (a) An Orbiter, capable of supporting, comfortably, as many as 4-6 people, and with its in-orbit staytime extended to, say, 3 weeks; plus two modestly powered freeflying platforms, with modest communications, and without crews, one in polar orbit, one in low inclination orbit, both capable of being leased from the private sector and periodically tended by Orbiter crews; plus a so-called orbital maneuvering vehicle (OMV) that could move back and forth between the Orbiter and freeflyers at other altitudes. This kind and amount of infrastructure would allow a very great deal of the kinds of scientific experimentation of currently identified interest, and the servicing of freeflyers as well. This is a "relatively lower cost" option.
- (b) The same as (a), but with the extended lifetime of the Orbiter supplemented, or replaced, by a permanent in-orbit facility having wide-band communications, 10-15 kilowatts of power, and able to support a human crew of 4-6 persons. This would allow long-term experiments using human beings as subjects or requiring in situ

human attendance that are not possible with the Orbiter -- the kind of experiments of particular interest in the life and materials sciences. This is a "relatively modest cost" option. This particular array of elements would provide capabilities substantially greater than those provided by the Soviet Union's present space infrastructure.

- (c) The same as (b), but with the addition of a reusable orbital transfer vehicle (ROTV) designed to move back and forth between its service module in low Earth orbit (LEO) and geostationary orbit (GEO). This addition would allow the possibility of servicing and modifying spacecraft in that 22,000-mile orbit, and could lay the basis for more efficient transportation between the Earth and the moon and the planets. This is a "relatively higher cost" option.

Please note that these examples are not to be taken as recommendations; I have given them to you simply to illustrate that there is a wide variety of infrastructure elements and capabilities to choose from -- and a correspondingly wide range of costs. The costs implied here cover a range of some ten-fold. In any of the examples the direct cost to the Federal Government could be kept to a minimum by making good use of already developed technology; keeping modifications thereto to a reasonable minimum; employing modern cost-conscious, commercial-like, acquisition practices; and cost sharing with other countries as well as, it is to be hoped, our private sector. Certainly, very useful capabilities can be obtained from infrastructure elements at costs to the Federal Government well less than those which NASA is now considering -- and, of course, even greater capabilities at greater cost.

In any case, there are likely to be cost-offsetting advantages in obtaining some carefully chosen ensemble of infrastructure elements: space transportation to and beyond LEO could become more efficient; equipment on board and in freeflyers could be serviced and modified; experiments might be conducted more rapidly and efficiently; the private sector and other governments could be expected to pay for the use of its services; and important "spin-offs" should be achieved. While it is not now possible to estimate the magnitude or time of attainment of these advantages, they could be considerable.

Cost Drivers

Let me now turn to costs generally.

Beyond the observation that, in some general fashion, the cost will increase with the magnitude and sophistication of the space capability acquired, it is difficult -- indeed, in our view, it is impossible, at this time -- to estimate the eventual cost of the infrastructure capability to the Federal Government. Let me observe that at least all of the following factors (and presumably, some others we have not considered) could have an important influence on this cost:

- (a) the total capability acquired -- which, as suggested by the examples I have just given, can encompass a considerable range;
- (b) the extent to which already developed, tested, and paid-for technology is used, vs a focus on new technology with its higher development cost and greater risk of cost overruns;

- (c) the substitution, where feasible, of automated systems for the accomplishment of tasks previously undertaken only by human beings;
- (d) the manner by which the infrastructure is acquired, i.e., the extent to which NASA puts the engineering challenge on the space industry by issuing performance specifications, rather than continuing to issue detailed engineering specifications and managing the acquisition process in detail;
- (e) the extent to which a large and rapid expansion of military space research, development, test, and evaluation (RDT&E) activities increases costs in the civilian space sector also;
- (f) the extent to which any "Christmas-tree effect" takes place within NASA, whereby the infrastructure acquisition management is persuaded by the NASA Centers to allow the cost of desirable but non-essential RDT&E activities to be charged to the acquisition program;
- (g) the effectiveness of NASA's efforts to persuade our private sector to develop infrastructure assets and services "on their own," and to provide them to the Government at purchase (or lease) prices lower than those achievable by the Government;
- (h) the effectiveness of NASA's efforts to effect eventual private-sector operation of infrastructure-related activities;

(i) the effectiveness of NASA's efforts to arrive at large-scale collaboration and related cost-sharing arrangements with other countries; and

(j) whether or not NASA moves, seriously, to protect the in-orbit infrastructure against physical attack.

Finally, inasmuch as there is no objective, urgent, external demand to obtain such an infrastructure (as we point out in the next section), an approximate average annual expenditure rate could be set for so doing, so as not to burden the budget excessively in any one year.

Thus there are a number of factors that could influence the net cost to the taxpayer for acquiring space infrastructure, and many opportunities to minimize the net cost that could be grasped by vigorous and imaginative NASA management, i.e., by bringing about the "cultural change" that some NASA leaders have recently called for.

I want to remind you that we are discussing today only the initial capital cost of this infrastructure -- to this cost must be added its on-going operation and maintenance (O&M) costs, the cost of instruments, furnaces, etc., needed for scientific experimentation in association with its use; and the interest cost of any money borrowed to fund the acquisition program. Remember, too, that the infrastructure will eventually wear out.

These considerations suggest that, over the next year or two, at least as much attention should be given to identifying better processes by which the country selects and develops its long-term space assets as there is given to any physical characteristics and capabilities that are to be obtained.

In this regard, it is important to note the specific words used by the President when he directed NASA to develop a "space station" and requested the Congress to authorize and appropriate funds to begin. He did not say the "space station" -- he said a "space station;" he allowed a full decade for its development; so far he has asked for less than 2 cents on the dollar of NASA's estimated initial operating capability (IOC) cost; he invited the active participation of other countries; and he envisaged a substantial potential for space commercialization in relationship to it. These steps allow adequate time, and sufficient flexibility, for careful evaluation of the most important uses to which any space infrastructure would be put; the kind and the amount needed, by when; how it should be procured; who should pay for it; and who should operate and use it.

Most importantly, they allow time for a national debate on the subject of appropriate, broad goals and objectives for space -- goals and objectives that would respond not only to the ends of science and exploration but to more general cultural, economic, and political ends as well.

Goals and Objectives

Mr. Chairman, it is very important to appreciate that space infrastructure is simply that -- infrastructure. Its availability would presumably allow certain new space-related goals to be addressed and objectives to be accomplished. But it would only be a "stepping stone" to the achievement of objective ends. The President stressed this point by saying: "But most importantly ... a space station will not be an end in itself..." and he stated that the country should reach for "... exciting goals in space ...".

The civilian space-related goals and objectives of the United States should be such as to command widespread attention; have great inherent

humanitarian and scientific interest; foster the development of new technology; have relevance to global issues; prompt international cooperation; and involve major participation of our private sector so as to advance our economic prospects. But over the past decade the government has not studied and articulated such a national agenda of goals and objectives. And to state that the infrastructure, or "space station," could serve 107 different uses, or interests, as NASA has done, does not provide us with kind of crisp, objective, and persuasive end uses that we should see advanced to explain the expenditure of the great sums and the use of the outstanding talents called for here.

In the absence of such goals and objectives, and with the great uncertainties in the estimate of any infrastructure cost to the public, OTA concludes that it is simply not yet possible to judge, objectively, whether or not NASA's presently suggested infrastructure elements are truly appropriate and worth their substantial cost.

Furthermore -- and OTA has been making this point for over a year -- we know of no broad and continuing professional study effort which could be used by our national leaders to see that the American public has the opportunity to consider and help initiate space-related activities that address important cultural, economic, social, and political ends. We are pleased to note that Dr. Keyworth spoke to this important matter last month in testifying before the House Subcommittee that deals with NASA Appropriations.

A successful National Commission on Space could go far toward calling widespread attention to our civil space problems and opportunities. It could give broad public consideration to our national interests here -- consideration that would encompass interests beyond those of science and technology that receive by far most of the attention today. Anticipating that

it could help in the national debate that the President's discussions and challenges call for, OTA is giving this possibility careful thought, and we will speak to it in our final report, which we hope to complete this spring.

The President's request for another large and eventually costly public space program should now prompt, indeed it now requires, a national dialogue about United States interests and purposes in the civilian space area. Our great investment in space -- to date, over \$200 billion (1984) -- has already positioned the United States to do almost anything it seriously wishes to do in and with respect to space, and there are many promising opportunities to do so. What is now needed is, to use NASA's own expression: "... the revitalization of the nation's space program ...", and a determination to understand that the nation's civilian space interests are now broader than our government's civilian space program.

Such a debate is prompted not only by NASA's presently expressed aspirations, but by military, other-country, and private-sector developments and considerations as well. All of these sectors of our society, our universities, and particularly interested sectors of the general public, should now move to participate in this debate.

Whatever the judgement of the Congress is regarding the Administration's request for studies defining the desired space infrastructure over the next two years, this time certainly should be used by both Congress and the Administration to see that the United States now decides upon and articulates again, in contemporary terms, its civilian space goals and objectives. And NASA could be encouraged to channel resources into new and imaginative space activities that would require the development of truly "cutting-edge" technology, and use current technology as much as possible in the development of a "space station."

As we now move beyond the initial exploratory period of space activities and approach the considered development of space, we should be careful, above all else, that we not get caught up in either fascination with or the details of exotic space technology. What these times call for is not so much technical expertise -- we have that in abundance -- but, rather, vision, wisdom, judgment, and leadership. We should all now focus on sensible and generally acceptable methods whereby we can indeed develop America's next frontier, meet human needs in so doing, and fashion new ways of paying for it as we go.

Summary

To recapitulate briefly, Mr. Chairman:

In our judgment, new forces emerging here and abroad, in both government and private sectors, will have an important influence upon the way by which any space infrastructure acquisition program develops over the next very few years, and the public cost of this program. Indeed, we would be surprised if NASA's present "space station" plans would be carried through to completion without major change.

And the energetic study, growing public discussion and, now, Presidential support of a "civilian space station" can serve a very useful purpose that transcends consideration of any station itself.

It is forcing us to re-examine our civilian space experience, institutions, and physical assets; our manner of acquiring, paying for and using these assets to provide large-scale useful goods and services; and the influence of the space interests of other countries, and of our own private and military sectors, upon our publicly funded civilian space activities.

Today, we have far too narrow and fuzzy a vision of our prospects in the space area. Without a clearer, more thoughtful, vision, how can we expect consensus on our objectives? And without consensus, how can we rationally make long-term public commitments? Arriving at such a consensus over the next two years should be our first order of business.

Mr. Chairman, thank you for inviting us here today. I trust that the completed OTA assessment, which will speak directly to all of the matters I have mentioned here, will be useful to the Committee when it is available a few months ahead.

[Attachment]

The Attached Tables and Their Description are to Accompany the

Statement of John H. Gibbons, Director

Office of Technology Assessment

U.S. Congress

Accompanied by T.F. Rogers, Director

Civilian Space Stations Assessment

Office of Technology Assessment

Before the Senate Committee on the Budget

Re "Civilian Space Stations"

February 27, 1984

ALTERNATIVE APPROACHES FOR REALIZING SPACE INFRASTRUCTURE

The accompanying Tables are designed to assist in evaluating alternative approaches for obtaining space infrastructure that could, in varying degree, satisfy various needs or requirements that have been expressed for such infrastructure. The Tables include those elements of a so-called civilian space station as now generally envisioned in NASA planning.

Typical options (of the many that could be examined) are shown in Table 1 for three groups of possibilities. First, the present Shuttle Orbiter and its possible modifications for extended stays on orbit (Extended Duration Orbiter -- EDO) are listed. Second, one version of the Spacelab developed as a free-flying inhabited core vehicle is examined. Finally, the present NASA-envisioned space station concept is given: both the initial operational capability (IOC) version (~1992) and a mature, fully-developed infrastructure (~2000).

The parameters for each option that may be used for rough comparative purposes are:

1. Approximate date of availability, assuming that a "go-ahead" were given in 1985;
2. Cost (in FY 1984 dollars) to produce the capabilities shown. Some options depend on existing hardware so the costs do not reflect similar proportions of development and production efforts for the various options;
3. Characteristics -- several design parameters and sizing factors that provide the bases for infrastructure capabilities;
4. Capabilities -- the types of functional activities that the listed infrastructure could support, and the degree to which these activities might be accomplished;

5. Responsiveness of a given infrastructure to the various reasons put forward for having a "civilian space station," including any extended presence of human beings in space.

If great and long-range space activities (such as say, for instance, the establishment of a lunar human settlement or the return of materials from the asteroids or Mars) come under consideration, they would appear to be achievable using a sophisticated orbital transfer vehicle coupled with on-orbit assembly, check-out, launch, and recovery. The one option listed in Table 1 with some of these capabilities is the NASA fully developed infrastructure.

Table 2 presents information on proposed "free-flyer" space platforms that could be used in conjunction with, and serviced by, any of the options listed in Table 1. In this way, additional capabilities could be added to the infrastructures given in Table 1 for the cost of buying and incorporating these platforms in the overall infrastructure.

Interest within the private sector indicates that it may be able to provide some of the platform elements of a space infrastructure; in Table 2, both MESA and LEASECRAFT are proposals of United States aerospace companies (Boeing Aerospace Company and Fairchild Space Company, respectively). Among others, a new private enterprise, Space Industries, Inc., is studying a module that would be a long-duration industrial facility suitable for manufacturing (materials processing) in space. While it is too early for details of design and cost to have been revealed by the company, the module apparently would be tended by a crew while the Shuttle was in its vicinity. As with the others, it could be in place prior to the planned installation of the NASA-proposed space infrastructure. In addition, both Teledyne-Brown and Ball Aerospace

Systems are studying the possibility of providing facilities that would be mounted in the Shuttle's cargo bay and used for experiments. And several space organizations are giving active consideration to private development of large, in-orbit power supplies.

Another alternative not specifically listed in the tables is the use of the Shuttle external tank (ET) as an infrastructure component. Conceivably, the ET could be used for fuel and materials storage, as a pressurized module, for mechanical structure, and as a safe haven during emergencies. A principal advantage is the low in-orbit cost. Relative to the other alternatives, it has received modest study and is therefore mentioned here only.

Some cautions should be noted in the interpretation of this information. These are preliminary descriptions of the options and estimates of their capabilities. All estimates are given to one significant figure. Capabilities have been described by qualitative adjectives; quantitative descriptions would be premature at present. In the fifth section, in response to the reasons advanced for a space infrastructure, the comparisons are qualitative and subjective in nature and are presented simply to bring these factors to the attention of the reader. Future revision is possible as issues become more sharply focussed and designs are given more study. For instance, as a particular item the Spacelab option of Table 1 is only one of several that have been put forward; one by European Space Agency (ESA) countries could definitely augment international cooperation if it were to be implemented.

Table 1
COMPARISON OF SOME OPTIONS FOR EARTH ORBIT INDEPENDENTLY OPERATING INFRASTRUCTURE

SYSTEM:	SHUTTLE ORBITER	EXTENDED DURATION ORBITER: PHASE I	EXTENDED DURATION ORBITER: PHASE II	SPACELAB (DEVELOPED AS PERMANENT INFRASTRUCTURE)	NASA INFRASTRUCTURE ASPIRATIONS: INITIAL OPERATIONAL CAPABILITY	MATURE, FULLY DEVELOPED
<u>Date available</u> (Now, or approximate, assuming start in 1985)	now	1988	1990	1990	1992	1996-2000
<u>Cost*</u> (Billions of FY 1984 dollars)	none	0.1	0.4	2	8	20
<u>Characteristics</u>						
Power to User: (kw)	7	7 (less if over full stay time)	20	6	90	200
Pressurized Volume (m ³)	2000	2000	5000 (with Spacelab habitat)	5000	5000	10,000
Crew Size	6	5	5	5	8	20
Miscellaneous	can accept Spacelab	no new technology	new technology required; limited laboratory space	limited crew accommodations	orbital maneuvering vehicle plus two free-flying unpressurized platforms	reusable orbital transfer vehicle plus several more platforms
<u>Capabilities</u>						
Time on Orbit	10 days	20 days	50 days	unlimited (60-90 day resupply)	unlimited (90 day resupply)	unlimited (90 day resupply)
Laboratories for:						
Life Sciences	yes	yes	yes	yes	yes	yes
Space Science/Applications	very modest	very modest	very modest	limited	extensive	extensive
Materials Science	some	some	moderate	moderate	extensive	extensive
Technology Development	modest	modest	some	moderate	extensive	extensive
Observatories	no	limited	limited	limited	extensive	full
Data/Communication Node	no	no	no	no	yes	yes
Servicing of Satellites	modest	modest	modest	modest	extensive	full
Manufacturing Facility (materials processing)	no	no	limited	limited	extensive	full
Large Structure Assembly	no	no	no	limited	moderate	extensive
Transportation Node	no	no	no	no	moderate	extensive*
Fuel and Supply Depot	no	no	no	no	no	yes
<u>Response to Reasons for Space Infrastructure</u>						
Maintain US Space Leadership and Technology Capability	no	little	some	modest	considerable	extensive
Respond to USSR Space Activities	no	weak	weak	modest	strong	very strong
Enable Long-Term Human Presence in Space	no	little	modest	considerable	extensive	extensive
Attention-Setting Heroic Public Spectacle	no	weak	weak	modest	modest	modest
Extended International Cooperation	little	little	potentially moderate	potentially moderate	potentially considerable	potentially extensive
Promote US Commercialization of Space	little	modest	modest	indeterminate	indeterminate	indeterminate
Maintain vigorous NASA Engineering Capability	no	negligible	negligible	little	extensive	extensive
Enhance National Security, Broadly Defined	no	negligible	negligible	little	indeterminate	indeterminate
Space Travel for Non-Technicians	little	little	little	little	some	some

* Incl. launch to moon, Mars, asteroid

Table 2
SPACE PLATFORMS THAT COULD BE SERVICED BY SHUTTLE
OR ANOTHER SPACE INFRASTRUCTURE ELEMENT, THE ORBITAL MANEUVERING VEHICLE

PLATFORM:	Unpressurized Coorbiting Platforms (serviced with extravehicular activity)				Pressurized Platform (serviced internally while docked)
	SPAS	MESA	LEASECRAFT	EURECA	EUROPEAN MODIFIED SPACELAB
<u>Data Available</u> (Now, or approximate assuming start in 1985)	now	now	1985	1987	1989
<u>Cost</u> (Billions of FY 1984 dollars)	0.005	0.01	0.2	0.2	0.6
<u>Characteristics</u>					
Power to Users (kW)	0.6	0.1	6	2	6
Pressurized Volume (ft ³)	none	none	none	none	3000
Crew Size	none	none	none	none	3
Miscellaneous	3000 lb payload	200 lb payload	10,000 lb payload	2000 lb payload	20,000 lb payload
<u>Capabilities</u>					
Time on Orbit	10 days	8 months	unlimited	6 months	unlimited
Laboratories for:					
Life Sciences	no	no	no	no	modest
Space Science/Applications	very limited	very limited	modest	modest	modest
Materials Science	very limited	no	modest	little	modest
Technology Development	no	no	little	modest	moderate
Observatories	no	no	modest	modest	moderate
Data/Communication Node	no	no	no	no	no
Servicing of Satellites	no	no	no	no	no
Manufacturing Facility (materials processing)	no	no	considerable	modest	considerable
Large Structure Assembly	no	no	no	no	no
Transportation Node (assembly, checkout and launch)	no	no	no	no	no
Fuel and Supply Depot	no	no	no	no	no
<u>Response to Reasons for Space Infrastructure</u>					
Maintain US Space Leadership and Technology Capability	no	no	no	no	no
Respond to USSR Space Activities	no	no	no	no	modest
Enable Long-Term Human Presence in Space	no	no	no	no	no
Attention/Gettting Aerobic Public Spectacle	no	no	no	no	no
Extended International Cooperation	yes	no	no	yes	yes
Prompt US Commercialization of Space	indeterminate	yes	yes	indeterminate	indeterminate
Maintain / Enhance NATC Engineering Capability	no	no	no	no	no
Enhance National Security, Broadly Defined	no	no	no	no	no
Space Travel for Non-Technicians	no	no	no	no	no

CIVIL SPACE STATION(S) ASSESSMENT
BIOGRAPHICAL SKETCHES OF ADVISORY PANEL MEMBERS

Following is a private list (in alphabetical order, with some of their past and present activities and positions) of those who have agreed to become members of the Advisory Panel to the Civil Space Stations study.

- a. Daniel Boorstin (202) 287-5205: Librarian of the Library of Congress; author of numerous books, many on American history; international lecturer; member of the American Academy of Arts and Sciences; Director of the National Museum of History and Technology, Smithsonian Institution; trustee of the Kennedy Center, the Woodrow Wilson Center, and the American Film Institute; Pulitzer prizewinner.
- b. Harvey Brooks (617) 495-2831: Harvard University Professor; educator and physicist; long time professional leader of studies of the broad social and public policy implications of science and technology; member of the President's Science Advisory Committee; Director, the Raytheon Co.

- c. Robert A. Charpie, Advisory Panel Chairman (617) 423-600: President, the Cabot Corporation, Boston; President of Bell and Howell and a senior officer of Union Carbide Corp. in Oak Ridge; member of the National Science Board; chairman of invention and innovation panel, U.S. Dept. of Commerce.
- d. Peter O. Crisp (212) 246-4040: Managing partner of Venrock Associates, a limited partnership formed by members of the Rockefeller Family and related institutions that invest in technology-based venture capital situations; Director of the following: Apple Computer, Inc.; Eastern Air Lines, Inc.; Evans R. Sutherland Computer Corporation; Thermo Electron Corporation; Galileo Electro-Optics Corporation.
- e. Freeman Dyson (609) 734-8055: Institute for Advanced Study in Princeton; outstanding scientist and science author ("Disturbing the Universe").
- f. James Farley (212) 697-1900: Chairman of the Board of Booz-Allen & Hamilton; Trustee of the National Urban League; member of Stanford Business School's Advisory Council; skilled and experienced in management and organizational matters of concern to major private organizations and public offices.
- g. Charles Fraser (803) 785-3333: Resort and Residential developer; creator of Sea Pines Plantation/Hilton Head; member of Presidential advisory commissions on the environment.

- h. Andrew Goodpaster (703) 548-6532: Army officer; Director of the Joint Staff; Commander-in-Chief, U.S. forces and Supreme Allied Commander, Europe; Superintendent of U.S. Military Academy at West Point; Fellow, the Woodrow Wilson International Center for Scholars.
- i. Charles Hitch (415) 486-4110: Economist; institutional executive; chief of economics division of the Rand Corp.; Assistant Secretary of Defense (Comptroller); President of the University of California; President of Resources for the Future.
- j. Bernard Knox (202) 234-3738: Humanist; Greek classical scholar; soldier, author, lecturer, playwright, actor; Director of Harvard University's Center for Hellenic Studies in Washington; winner of the George Jean Nathan Award for Dramatic Criticism.
- k. Moya Lear (702) 972-2601: Board Chairman, the Lear Avia Corp.; responsible for the final design and production of the novel Lear Fan general aviation aircraft.
- l. George Mueller (805) 969-0206: Senior Vice-President of the Burroughs Corporation; President of Systems Development Corporation; early member of the Ramo-Wooldrich ICBM group; NASA Associate Administrator and head of the Manned Spaceflight Program; Senior Vice-President of General Dynamics; Fellow of the AAAS, IEEE, AIAA, etc.; member of the National Academy Of Engineering; teacher; author.

- m. Carl Sagan (607) 256-4971: Planetary and space scientist; Professor at Cornell University; author of science-related books; conductor of science-related television programs; Pulitzer prize winner.

- n. Eugene Skolnikoff (617) 253-3140: Professor at the Massachusetts Institute of Technology; Senior consultant to the OSTP; Chairman of the Board of Trustees of the German Marshall Fund, USA; Board of Trustees of UN Research Institute for Social Development.

- o. James Spilker (408) 748-1010: President and Chairman of the Board of Stanford Telecommunications Inc.; Director of Advanced Informations Systems at Ford; taught and lectured at Stanford and George Washington Universities; IEEE Fellow; National Chairman of the IEEE technical appraisals; recognized for his contributions to the development of digital satellite communications and satellite navigation systems; author of a book on digital communications by satellite.

- p. Frank Stanton (212) 752-4445: Corporate executive; President C.B.S.; Board of Directors of Pan American Airlines, Atlantic Richfield, the London Observer, American Electric Power Co.; Vice President of the League of Red Cross Societies; Board of overseers of Harvard College.

- q. James Van Allen (319) 353-4531: Atmospheric and space scientist; Professor, Iowa University; discoverer of the Earth's ionized gaseous "belt" that bears his name.

BENEFITS FROM MOON TRIP GREATER THAN ANTICIPATED

Chairman DOMENICI. Senator Chiles.

Senator CHILES. Dr. Gibbons, what if we approached going to the moon that way? Do you think we would have gotten there yet?

Mr. GIBBONS. I think the goal was very well articulated and the cost was rather well predictable, Senator Chiles.

Senator CHILES. Well, I do not think we had any idea when we were talking about going for the Moon what that would mean to us and what the byproducts would be, or how we would benefit. We were challenging a frontier, but it seems to me that the return on that has been much greater than any of us anticipated in view of the great breakthroughs.

When we go out into the space, how in the hell can you study it forever and predict what we will get out of it. It is new. If Columbus had done that, or Isabella had required him to do that, he would still be studying the voyage.

Mr. GIBBONS. Senator Chiles, I was involved in research at the bench, including some space research, for 20 years before I came to Washington. And I can fully appreciate your concern and interest in exploration.

The Apollo program was a grand exploration joined by the American people, very well articulated in advance. We do not feel that any so-called space station, in terms of its focus on physical design, its interest in housing a certain number of people for as yet undefined activities, has any kind of that degree of specification or forethought at this point.

Senator CHILES. You think the Moon shot was so articulated in advance? All I remember about it is that the President said we are going to go there and we are going to get there first. And I want us to be there by a certain time. It seems like to me those were the marching orders and off we went.

Mr. GIBBONS. Well, that is correct. I cannot argue with that. In fact, I supported that project.

I would only add, Senator Chiles, that there are a variety of ways to make the next step in both exploration as well as exploitation in space. There is not a single price tag, and some of the price tags would be a small fraction of those proposed by NASA, and yet an enormous number of new things could be undertaken. And unless one is more definitive about what one would like to do and what one thinks one can do using the existing enormous knowledge that we have gained, we may be putting more money on that horse at this time than we need to.

OFFICE OF TECHNOLOGY ASSESSMENT RESPONSIBILITIES

Chairman DOMENICI. Let me ask you, Dr. Gibbons.

Frankly, over the years, I have had a lot of difficulty in my own mind deciding what your Office of Technology Assessment ought to do. In fact, I looked at it in the past and wondered what it did. Maybe you have added some new capability at the top, but should this not be one of the areas where you ought to have some real advice for Congress, whether we should go on with this or not? Or am I missing the point?

I am not now suggesting that you do or do not have advice, but it seems to me that we have a National Academy saying one thing over here and we have the administration saying another, science advisors to the President, guys running NASA saying another thing. Should you be the one that is really telling us what this is all about in objective terms?

Mr. GIBBONS. Senator, that is our intent, and we are in the process of completing the work that I referred to in my testimony, and we would be pleased to brief you in more detail. What we tried to tell you is why you are hearing such different numbers, different opinions from different groups of experts, and what we think your options are in responding to those differences. And we will give you a sequence of options that we see as all plausible within that framework.

Chairman DOMENICI. Well, I would certainly agree that you have a role—as a matter of fact, I think I would say if you do not have a role in this kind, I wonder what you have a role in. And I would hope that you would—since we created your office, because many of us thought we could not cope with the finance and expertise of the scientists, I would hope that as you evaluate it, that you would appreciate the fact that few of us are that and we need some very basic fundamental pros and cons that are clearly understandable. I had difficulty following what you had to say today, and I do not make any apologies for that. It is probably my fault at this point. But I do not think it is your fault.

If you can, from time to time we would appreciate that kind of information. I hope you will do it in the next few months on this because it is going to be here and voted on pretty soon, I would think.

Mr. GIBBONS. I would be pleased to do so, Senator.

SITUATION OF RESEARCH UNIVERSITIES VERY COMPLICATED

Chairman DOMENICI. Dr. Carey, let me ask you.

You heard my concern expressed to Dr. Keyworth about the Defense Department maybe going off all on its own, putting to bid many contracts for research that have heretofore, for decades in some instances, been in universities.

My concern is not that the competition is not welcome, but my concern is the many unanalyzed pluses that come with the continuity of university activities, their building of their expertise, their lab capacity, and my concern that that might not be analyzed appropriately in any quick switch from the university emphasis to anybody that can bid it cheaper, have added that sort of thing.

Can you express yourself on that, please?

Mr. CAREY. I think you have got it right, Senator.

The situation of the research universities, and particularly the major ones, is very complicated at this point. The buildup in the funding available is largely now in the military. The Science Foundation has a smaller base, it is growing too, but the base is very, very much smaller. The conditions of university research and development equipment, instruments, and so forth, facilities have not been improving over time so the system is being strained.

Now, if for those kinds of strains, including the one that I mentioned in my testimony this morning, the question of censorship over unclassified research, if all of these strains come into play and you have additionally a procurement style of uncertainty, the predicament of the university president, or the university trustees, and the faculty becomes almost unbearable. The situation cannot be counted on from year to year, and you do not do research from year to year. You do research as long as it takes you to—as long as it is necessary to do the research until you get results that are significant, and you cannot put it down, and pick it up, and put it down, and pick it up, and go shopping. That is not the way the system works. The scale is much larger, Senator, than it ever has been before, and I would share your concern.

SCIENCE AND MATH EDUCATION

Chairman DOMENICI. In terms of the National Science Foundation effort expressed in this budget, as it pertains to the emphasis on teaching math and science, which is obviously a very great national—of great national concern at this point, have you reviewed their—the administration's proposal with reference to enhancement of math and science and what are your—

Mr. CAREY. Well, I have looked at the budget, Senator, and it establishes for me that it is a steady-state budget at a level of something like \$75 million, 2 years in a row after seven studies, so it is not good enough. It is true that in the Department of Education there is a provision for \$50 million block grant. I do not know how it is going to be used, I do not know anyone who knows how it is going to be used, except that it is going to be used in a formula, and when you take 50 States, you take 30,000, 40,000 school districts and you shake up the \$50 million that is in this formula grant, it makes no sense to me, Senator. The National Science Board which supposedly presides over NSF came up with a report, and I think that the bill was something like—was over half a billion dollars a year to get started in correcting this situation. So they have \$75 million, the same as last year, no new ideas, no support, but everywhere else in the budget the money is going up. And I do not think it makes any sense and I think that the Congress, Senator, has got to take a look at that.

It is investment that we are talking about. It is not expenditure. It is investment, and the whole system stands on that investment.

Chairman DOMENICI. Well, last year, the first resolution assumed \$430 million for science, math, and education.

The authorization bill has not cleared both Houses to create this new emphasis. Nonetheless, the appropriators are going to spend a considerable amount of money, and I would assume it would be more than \$75 million.

I think you are correct. If anything, we ought to take it out somewhere else and put it in that one. We just have to build up the enthusiasm and interest of the bright young people in our country to get into math and science.

Mr. CAREY. But you also have to sustain it, Senator, over a number of years, and that is why we get back to the question of what happens when we get control of this deficit, we are going to

have to get control of it as you have said more than anybody else. Something—everything cannot go up, including in this R&D area and education area, so there has to be more balancing and more rational structure to all of this than these numbers imply, with all respect to Dr. Keyworth and his colleagues.

Chairman DOMENICI. I have no further questions.

We stand in recess. Thank you very much.

[Whereupon, at 12:16 p.m., the committee adjourned, subject to the call of the Chair.]

WRITTEN COMMITTEE QUESTIONS TO WITNESSES AND THE RESPONSES

QUESTIONS TO MR. KEYWORTH

R&D INITIATIVES

QUESTION: What major new R&D initiatives are currently being discussed that are not included in the 1985 request?

ANSWER: We expect to begin discussions with the agencies in the next couple of months on their R&D priorities for the coming fiscal year. These may reflect conclusions and recommendations from a variety of sources, for example, committees now at work under the auspices of the National Academy of Sciences, such as the Committee on Earthquake Engineering Facilities and Instrumentation.

We are continuing discussions with the agencies on the specifics of implementing the 1985 budget; for example, we are working with NSF to develop a coherent and effective plan for science and engineering education. We are also looking at ways to better integrate Federal laboratory resources with the needs of industry and academia.

SUPERCONDUCTING SUPER COLLIDER

QUESTION: We've heard about the Superconducting Super Collider that would replace the accelerator at Brookhaven. Why is such an expensive instrument needed?

ANSWER: The Superconducting Super Collider (SSC) is a machine design at the forefront of High Energy Physics today. At the 10-20 TeV range, this machine will be unique in the world and enable science to be expanded in the areas of physics beyond the present state of knowledge. In addition, the spin-offs from such an undertaking will enhance this machine's utility. The Department of Energy is presently involved in a detailed design, cost and schedule evaluation. By August of this year the Department will be prepared to make a decision whether to proceed with phase 1.

CANCELLATION OF THE BROOKHAVEN ACCELERATOR

QUESTION: How can we afford this device and explain to the American taxpayer the cancellation of the half-funded Brookhaven accelerator?

ANSWER: At the time of initial conception, the Brookhaven accelerator was at the state-of-knowledge in the high energy physics community. Since that point, however, there developed many technical difficulties causing delays in the schedule. These delays forced this accelerator design to slip from the forefront of physics. With other world developments including the great success of the CERN laboratory in the construction and operation of a proton-antiproton colliding beam and the subsequent discovery of the W and Z particles, emphasis has focused on physics experiments in the several trillion electron volt (TeV) mass range. In this range, new phenomena and new forms of matter having unique properties are firmly expected.

If the U.S. wishes to remain in the forefront of high energy physics, the Superconducting Super Collider (SSC) in the range of 10 to 20 TeV is to be studied. By August of this year, the Department of Energy will have sufficient information concerning cost and schedule to make a decision whether to proceed with Phase I design.

FEDERAL R&D MANAGEMENT

QUESTION: Do you have any recommendations of your own that would make Federal R&D management more efficient and cost effective?

ANSWER: The problems with the management of our R&D laboratories have existed for so long and are so well known that it would be hard to come up with an action that has not been recommended. The need is now to take these actions, and that is what I am focusing on. I am following closely the progress of the agencies in implementing the recommendations of the White House Science Council.

FEDERAL CIVIL SPACE R&D FUNDING

QUESTION: What are the impacts of expenditures for a space station plus the Shuttle funding over the next five to seven years in other federal civil space R&D areas, such as space science, space applications, and space technology development?

ANSWER: As production of the full 4-orbiter fleet is completed and the Space Transportation System becomes fully operational, requirements for Shuttle development funds will wind down. Much of the build-up in Space Station funding is expected to take advantage of the declining requirements for Shuttle development. We plan to continue a vigorous and balanced program in space science and applications, and we intend to provide a careful review of future budgets to insure that these activities are not adversely impacted by the space station development. The area of space technology development will be expanded by the space station development, but we will continue to monitor this area to assure a balanced development program.

HUMANS IN SPACE

QUESTION: Given the relatively high cost of sustaining humans in space, what are the pay-offs expected to be?

ANSWER: The primary value of men and women working in space is that mankind's spirit is lifted and his vision is stimulated and expanded by the highly visible demonstration that humans are not bound to Earth but can travel into space, explore its utility, and push back its endless frontiers. This great value was exemplified by the Apollo program. We should look ahead to the day when humans leave the earth for prolonged and detailed exploration and exploitation of other places in the solar system. We must establish experimentally the effectiveness of humans in space as well as the physiological and psychological effects on them produced by prolonged exposure to the zero gravity and isolation of space.

Humans also bring to operations in space their ability to diagnose and react to the unexpected or unplanned situation. The human brain can deal with certain classes of circumstances that are beyond the ability, and flexibility, of the most sophisticated computers.

We have seen some examples of the value of human participants in space research in the recent Spacelab-1 flight where the crew conducted a variety of scientific experiments directly under their own control. They

were able to observe the progress of the experiments, assess their progress, and change procedures in reaction to experiment results or equipment anomalies as the experiment proceeded. The repair of equipment which has failed on orbit has also been demonstrated on many missions.

LOWER-COST ALTERNATIVES

QUESTION: Are there any lower-cost alternatives?

ANSWER: There are, of course, no lower-cost alternatives for the first item discussed. With the advancement of automated systems, including robotics, many of the complex and interactive functions previously performed by humans in space can and will be performed in the future by automated systems. For many (perhaps most) of the functions to be performed in space, the automated systems will be more cost-effective than humans. As experience is gained with large engineering systems in space, such as the Space Station, the role and the limitations of humans and of the cost-effectiveness of sophisticated automated systems will become clarified. A continuing evaluation must be made to ensure that the automated systems are introduced to perform those functions for which they are the most cost-effective and that man perform only those roles for which he is best suited.

QUESTIONS TO MR. BEGGS

Questions submitted by Senator Domenici and Chiles.

Question 1: What kind and how much international participation do you expect to get on the Space Station? How can NASA at the definition stage of the program, negotiate in good faith?

Answer 1: NASA has a long history of successful international cooperation in major space programs. The European Spacelab and the Remote Manipulator System developed by Canada for the Shuttle are good recent examples. Since the initiation of our Space Station planning activities, they have taken an active interest and have conducted their own mission requirements studies and reviewed potential contributions they might make to a U.S. program. We have mutually shared the results of our studies and our potential foreign partners fully understand our planning approach.

The question of how much and what kind of international participation we expect on the Space Station is somewhat premature. A baseline Space Station configuration has not yet been selected. We are inviting our potential partners to work very closely with us during the coming year, when we will thoroughly define the Space Station concept and baseline a configuration. This is necessary for our potential foreign partners and ourselves to reach firm decisions about what type of contributions are or are not desirable. We believe our potential partners understand this and are agreeable to working with us on that basis. In our discussions to date, we have noted repeatedly that the United States seeks significant contributions that will make a meaningful partnership.

Another aspect of foreign participation in the Space Station program is the utilization of station capabilities once it is operational. Here too we have been working closely with potential foreign users and foreign mission requirements are being factored into the overall station capability analysis.

Question 2: What is the potential private sector market for the Space Station?

Answer 2: While it is not yet possible to predict specific market potential for private sector utilization of the Space Station, a number of promising candidate areas, such as pharmaceutical production and development of high-purity semiconductor materials, are currently being pursued. As the Government commitment to permanent operations on-orbit becomes more fully understood by the private sector, we expect additional ventures to be pursued.

Question 3: What indications of interest in the Space Station has NASA had from the private sector?

Answer 3: NASA currently has two study contractors pursuing potential commercial utilization of the Space Station with private sector interests identified in earlier Space Station mission analysis studies. Of the fifty companies contacted, over thirty have indicated an interest in pursuing concepts for experiments to be conducted in space which could lead to commercial ventures.

Question 4: Do you anticipate DOD will be a major user of the Space Station?

Answer 4: To date, the DOD has identified no requirements for a manned Space Station. It is not anticipated that DOD will be a major use of the civil Space Station.

Question 5: What are the national security implications of encouraging international cooperation on the Space Station?

Answer 5: By strengthening the ties between the United States and her allies and friends, international cooperation on the Space Station would enhance our overall national security. The enhancement is achieved not in a military sense, but in a geopolitical sense--by uniting Free World nations in a highly visible, common endeavor that has mutual scientific and commercial benefit. A further implication for national security of international cooperation relates to potential future utilization by the Department of Defense of Space Station capabilities in the area of technology development. With international cooperation, such Space Station utilization would require appropriate safeguards.

Question 6: You have said that Space Station development will not adversely affect NASA's space science program. Putting FY 1985's budget request aside, how, specifically, do you intend to guarantee a sustained budgetary commitment to space science over the next decade?

Answer 6: It is our intent to maintain a vigorous space science program through the use of the current Space Transportation System and ultimately the Space Station. Clearly, the Space Station will play a major role in the conduct of future science initiatives. Based on this expectation, I have formed a committee under Dr. Peter Banks of Stanford University to evaluate the potential of a Space Station in performing specific science endeavors in the various disciplines. Therefore, it is my intent to continue the conduct of

space science over the next decade through the utilization of both the STS and the Space Station.

Question 7: Please define what "commercialization of space" means to NASA.

Answer 7: "Commercialization of Space" is the term used to describe efforts involving either new high-technology commercial (private sector) ventures in space or new commercial applications of existing technology in space.

Question 8: -What is the Administration's policy on commercialization of space?

Answer 8: In his National Space Policy dated July 4, 1982, President Reagan said that, "The United States Government will provide a climate conducive to expanded private sector investment and involvement in civil space activities...."

Also, in his State of the Union Message on January 26, 1984, the President stated, "We will soon implement a number of executive initiatives, develop proposals to ease regulatory constraints, and, with NASA's help, promote private sector investment in space."

NASA will do what is necessary to support the President's policy.

Question 9: How does this differ from "privatization" of space?

Answer 9: NASA has been using the term "privatization" for the transfer of existing programs and services to the private sector for commercial exploitation. Commercialization deals with new high-technology programs and services and with new applications of existing technology. Commercialization has also occasionally been used to cover all three areas.

Question 10: Please explain NASA's Shuttle reimbursement policy, including the level of cost recovery you expect currently and in the future.

Answer 10: The price for Shuttle launches in FY 1983, 1984, and 1985 was published by NASA in 1977. This policy was based on the principle that, whereas the Government should eventually recover its total operations costs for Shuttle, nonetheless, NASA should charge a fixed, flat rate price for the first three years to enhance transition to the Shuttle.

The underlying principles of the 1977 Shuttle Reimbursement Policy were to encourage full and effective use of space; to effect an early transition from expendable launch vehicles (ELV's); and to recover the operating costs incurred in providing launch services, as well as set a fair rate structure by charging each class of customers on the basis of Shuttle capability required and on a non-discriminatory basis for similar services. The goal was to recover the Shuttle's operating costs over the first twelve years of operations; no attempt was planned to recover U.S. Government expenses for Shuttle development.

The price of a dedicated Shuttle flight was set as \$18 million (FY 1975 dollars), subject to escalation. Customers requiring only a section of the orbiter cargo bay were charged a percentage of the Shuttle dedicated flight price based on the size or weight of the payload. Shared Shuttle flights permitted smaller payloads to fly at relatively low costs.

In June, 1982, the decision was made to adopt a three year Phase II pricing policy for launches in FY 1986-1988, based on projected three year average out-of-pocket costs. The price for a dedicated Shuttle launch was set at \$71 million (FY 1982 dollars).

The basic principle of this pricing policy is that since the Shuttle is a national asset which is required for U.S. Government launches, the commercial and foreign customers should pay a price based on the full costs which NASA incurs on their behalf.

Under the out-of-pocket costing concept, commercial and foreign customers of the Shuttle are charged based on the average total cost per flight for consumables (hardware items such as external tank, solid rocket boosters, etc.) plus the total incremental cost of launch operations and flight operations above the costs required to support the basic flight capability needed for Government missions. This policy results in the commercial and foreign customers of the Shuttle paying not only the cost incurred by the Government for their launches but also in them making a contribution to the base cost for launching the required U.S. Government launches. For example, in Phase II (FY 1986-1988) the dedicated Shuttle price charged to commercial and foreign customers is \$71 million (FY 1982 dollars) per flight. However, the total cost to fly these customers, beyond the cost for the required U.S. Government launches, is estimated at \$43 million (FY 1982 dollars) per flight. Based on these estimated costs, each full commercial and foreign

Shuttle flight contributes approximately \$28 million (FY 1982 dollars) to the cost of U.S. Government launches. This lowers the cost that the U.S. taxpayer has to pay for the U.S. Government launches of Shuttle.

The price for future Shuttle flights (post-FY 1988) is currently under review at NASA.

Question 11: To what extent could Shuttle reimbursement fees be increased, without losing commercial payloads to our competitors in space?

Answer 11: Shuttle flight charges for flights through FY 1988 are, of course, fixed already. For launches in FY 1989 and subsequent years, the effect of increasing the Shuttle prices on customers who are basing launch vehicle selection upon price is dependent on how significant the price differential is. We have several instances currently where the Ariane launch prices were slightly lower than Shuttle's, even after adjusting for higher insurance rates. However, potential domestic commercial ELV operators are estimating launch costs much higher than the current Shuttle price. We believe customers choose Shuttle because of NASA's 25 years of experience in the launch service area and because NASA was better able to meet their launch needs. If the price differential remains small, we would expect that situation to continue.

Question 12: What does the \$150 million in the FY 1985 budget for the Space Station buy in new technology?

Answer 12: Approximately forty percent of the planned FY 1985 budget is for developing and demonstrating new high-leverage technologies for the Space Station. We believe that these technologies are necessary to enable us to design and build a Space Station having the following key operational characteristics--indefinite on-orbit presence, routine accessibility via the Shuttle, permanently manned occupancy, provisions for maintenance and repair in space, built-in growth potential, and use accommodations. The advanced technology program activity will focus generic technologies to Space Station applications, build and integrate prototype components into subsystems for test and assessment in ground-based test bed facilities, and conduct flight experiments utilizing the Shuttle where appropriate. Those technologies which are found to be of sufficient maturity and value will be incorporated in the hardware development phase planned for initiative in FY 1987. A list of the candidate technologies for development follows:

- o Power:
 - High Capacity Energy Storage
 - Improved Performance Solar Arrays
 - Fuel Cell Electrolysis
 - Automated Power Subsystems
 - High Voltage/Power Components
 - Bulk Power Transfer
- o Environmental Control and Life Support:
 - Extravehicular Activity - Suit
Mobility Aids
Tools
 - Crew and Work Station Accommodations
 - Regenerable Life Support System
- o Auxiliary Propulsion:
 - Low Thrust Gaseous Hydrogen/Oxygen
Auxiliary Propulsion System Components
 - Cryogenic Fluid Management
 - Electrothermal Thruster System
- o Data Management:
 - High Speed/Capacity Data Systems
 - Fault Tolerant Systems
 - Bubble Memory Systems
 - Adaptive Data Networking
 - Software Management
- o Structures/Mechanisms:
 - Advanced Materials for Coatings,
and Films
 - Active/Passive Damping
 - Rendezvous, Docking, Berthing Systems
 - Advanced Mechanisms
 - Structural Concepts,
 - Dynamics and Analysis for Large Arrays,
- o Thermal:
 - Integrated Thermal Utility/Thermal Bus
 - Maintainable/Replaceable Radiator
 - Long Life Heat Rejection
 - Versatile Thermal Acquisition and
Transport
- o Human Capabilities:
 - Habitability Requirements for Extra-
vehicular and Intravehicular Activity
(EVA and IVA)
 - Man/Machine Function Allocations
 - Human Interface to Intelligent Systems
 - Direct, Supervisory and Automatic
Control of Teleoperators and Robotics
 - Orbital Maintenance Methodology
 - Medical Aspects

- o Attitude Control and Stabilization:
 - Predictive Methods for Large Spacecraft Response
 - Integrated Analysis Methods
 - Advanced Guidance and Control Components
 - Large Momentum Management Devices
- o Communications:
 - Multiple Use Antennas
 - Infrared Communication Systems
 - Accurate Ranging and Tracking Systems
 - 60 Gigahertz Devices/Components
 - Vehicle-to-Vehicle and Vehicle-to-Station Communication Systems
- o Systems/Operations:
 - Autonomous Systems
 - Hierarchical Control
 - Self Diagnosis/Repair
 - Integrated Crew and Life Support/Energy Management System Development
 - Attitude Control/Energy/Crew and Life Support System Development

Question 13: How soft is the \$150 million estimate?

Answer 13: The \$150 million is a firm estimate of the requirements for a significant definition effort in FY 1985. The \$150 million request is principally comprised of activities in two major areas: advanced technology which accounts for about 45 percent of the total funding and systems definition effort, which is about 40 percent of the request. The \$150 million level maintains a balance between these two areas that would be undermined at lower levels and would impair our ability to proceed with an extended definition prior to the initiation of hardware development. The request is based upon 18 months of detailed study activity and supports the stated goals of the program. It is the minimum amount required to initiate the Space Station program.

Our original estimate was for the initiation of an extended definition effort with \$235 million requested for FY 1985. The major impact of this reduction in FY 1985 is a four month delay in the start of Phase B contract definition studies and a subsequent delay in the initiation of the development contracts in FY 1987.

Question 14: What will the initial configuration of the Space Station look like?

Answer 14: A number of potential configurations are currently under study. While it is not yet possible to describe what the initial configuration of the Space Station will look like, it will consist of three major elements: (1) a manned base at a 28.5 degree inclination, (2) an unmanned platform at a 28.5 degree inclination, and (3) an unmanned platform at near-polar orbit. The manned base will consist of pressurized modules with environmental control and life support capability, one unpressurized module with solar arrays and a radiator, a satellite servicing platform, and support structures for externally attached instruments. The pressurized modules will include: two operations (or logistics) module, and a berthing and assembly module. The platforms will be unpressurized modules with solar arrays, radiators and support structure for attached instruments. A baseline configuration will be selected during the first phase of the definition contracts which will be initiated in FY 1985.

Question 15: We are aware of NASA's strong position in favor of a Space Station. Without passing judgment of the merits of that position, what would NASA's program plan look like for the next decade, if the Space Station development was not undertaken? Is there another "major" mission on the scope of the Apollo or Shuttle program which has been or is being discussed?

Answer 15: Three principal alternative programs comprise NASA's plan for the next decade were a Space Station development not undertaken:

The first alternative is a fairly static program with continued Shuttle/Spacelab missions, the approved science missions (e.g., Space Telescope, Gamma Ray Observatory, Galileo), the core solar system exploration program initiated with the Venus Radar Mapper and the proposed Mars Geoscience/Climatology Orbiter, and appropriate applications and technology missions not yet defined.

To the above alternative could be added major automated missions such as a Mars Sample Return or a Comet Rendezvous mission. Such a program would be characterized by specific technological advances narrowly oriented to the specific missions and not translatable across the program broadly.

A buildup towards a major manned mission of the scope of Apollo is the third alternative. Although no such major program has been given serious consideration

in recent years, many such programs have been studied to varying degrees during the latter 1960's and early 1970's. Such missions could include a manned planetary mission or a return to the moon for development of a lunar base and resources. For missions of this scope, extensive studies would need to be initiated soon so that the major development could begin by about 1990 with a target to accomplish the mission by the end of this century. It is noteworthy that such a program would require some form of heavy lift launch vehicle initiated right at the beginning of the program. Further, most of the major missions of this type would require many technologies also required for a Space Station and could be accomplished more efficiently with the aid of a Space Station.

Question 16: The Grace Commission proposes to increase private participation in space by using private financing for a fifth orbiter and also by shifting to private industry responsibility for future Expendable Launch Vehicles. Would you comment on these proposals?

Answer 16: Private financing for a fifth orbiter remains an option which NASA is willing to consider. The Space Transportation Company which made a proposal to finance a fifth orbiter, was renamed Space Projects Corporation, during last summer. Subsequently, Space Projects Corporation notified NASA that they retained ownership of the fifth orbiter proposal, however, no further negotiations have been initiated by the company.

Recently, another firm has indicated interest in purchase of a fifth orbiter and NASA has indicated a willingness to open discussions. Regarding private industry responsibility for future ELV's, NASA is actively working this area for two programs, Delta and Atlas Centaur. In January, 1984, Transpace Carriers, Inc., (TCI) was selected to negotiate marketing and production rights for the Delta vehicle and General Dynamics Convair Division was selected to negotiate full transfer of Atlas program responsibilities. These negotiations are progressing well.

A preliminary agreement with TCI is nearing completion; if the conditions of the preliminary agreement are met, the final transfer is intended to occur about October 1, 1984, for launch responsibility beginning in 1985. The GDC negotiations have begun but are not on as critical a time schedule as the Delta, since GDC proposed to market Atlas Centaur vehicles for launches after mid-1987.

Question 17: Do you believe that a manned Space Station can help change the way this Nation does

business in space? Will we, for example, be able to move away from these very expensive, one-of-a-kind types of satellites and build more inexpensive satellites that may allow us to do some things that we have never done before?

Answer 17: It is indeed believed that a permanent Space Station will help in changing the way in which the Nation does business in space. The transition from essentially ground-based operations to the maintenance of space assets permanently on-orbit will provide new capabilities and a new approach to the conduct of space missions. Future science, technology and commercial requirements demand high power and data rate experiments which, by themselves, may be expensive but which benefit enormously from the symbiotic nature of Space Station capabilities. Necessary manned interaction must be factored in until true autonomous systems can be developed, freeing up the manned interaction for future, more highly developed activities. The flexible nature of the planned Space Station modular design allows servicing through spare parts or replacements of particular experiments and should prove more cost effective than the necessity of periodically replacing whole satellite configurations.

QUESTIONS TO MR. CAREY

QUESTION 1

Could you briefly describe the terms: basic research, applied research, development?

ANSWER 1

In our various analyses, we adhere to the generally accepted definitions set forth by the National Science Foundation. An excerpt containing these definitions is attached; the source document is Federal Funds for Research and Development: Fiscal Years 1980, 1981 and 1982, NSF 81-325, page 2. (I might note that another taxonomic approach has been suggested by Anna J. Harrison, President of the AAAS, in her recent testimony before the House Science and Technology Committee. She has set forth definitions of science and engineering in a broad societal context. A copy of her testimony is enclosed; please note page 4 particularly).

QUESTION 2

How does the U.S. emphasis on basic research and also on development compare with other countries such as Japan and West Germany?

ANSWER 2

The current series of international comparisons tabulated by NSF in the latest Science Indicators: 1982 (recently published) do not contain break-outs for basic research and for development. The tables and charts show total R&D and civilian R&D, along with a number of other elements such as published scientific and technical articles, patents granted, robots installed, etc. A few key observations follow:

- (1) As a percentage of GNP, national R&D expenditures of the U.S. exceed those of other nations except the U.S.S.R. (which is higher) and West Germany (which is the same). For 1983, the U.S. percentage was 2.7 percent -- a rise from the 2.2 - 2.3 range of the 1970's.
- (2) The U.S. has a lower civilian R&D (less defense and space) - to - GNP ratio than Japan and West Germany. This is an important measure because, although defense and space R&D have important economic impacts, civilian R&D probably is more directly relevant to economic growth and other social goals. (1.7 percent for the U.S. in 1983 compares with numbers in the range of 2.3 to 2.5 percent for Japan and West Germany, respectively.)
- (3) An indirect indication of what is happening in basic research can be obtained by an examination of

scientific and technical output in the form of published articles and reviews in the world's leading 2,100 journals. During the 1970s, the U.S. proportion of literature in all fields combined declined slightly, and dropped in six out of eight fields. It is likely that such a trend helped influence the Reagan Administration to increase its emphasis on the support of basic research.

QUESTION 3

What evidence, if any, is there that the private sector is picking up support for applied research and development efforts that the federal government has abandoned?

ANSWER 3

The AAAS is not aware of any specific studies or reports dealing directly with this question. Our recommendation to the Committee would be to call for a broad examination of this issue. However, as general background, we would offer the following comments.

One of the most troublesome generic problems in federal R&D is the implementation of the policy that applied research and development for non-governmental purposes should be done and paid for by the private sector (or other non-federal government entities) unless there are compelling reasons to the contrary. The policy is not new, but the problems have become more acute because the present administration has taken a more restrictive view of the government's role and a more aggressive stance in weeding out federal support of R&D that does not meet their criteria.

In addition to basic questions on the merits of the policy itself -- in general or in particular areas -- there are some difficult problems in implementing shifts or funding responsibility from the federal government to the private sector.

Cutting an R&D program out of the federal budget does not automatically result in the private sector taking it over. The economic incentives may not be sufficient, or the private sector may not be organized to take advantage of them. The private sector may simply not believe that the government will actually discontinue programs it has carried on for many years.

It seems essential, therefore, that two fundamental questions be faced in each case where a cutback in federal R&D is proposed because the R&D should be funded by the private sector: Will the private sector in fact support R&D equivalent to what is being cut from the federal budget? If this is in doubt, is the outcome -- i.e., that the R&D may not be done at all -- acceptable in the national interest?

These questions deserve careful examination for each of the R&D cutbacks in the FY 1985 budget based on the inappropriateness of federal rather than

private or other non-federal support. A partial listing of programs affected includes: numerous DOE energy R&D programs, the NASA advanced communications test satellite, the Centers for Building Technology and Fire Research in the Bureau of Standards, some ocean research programs in NOAA, and the Minerals Institutes in the Bureau of Mines.

In examining these areas in the context of NSF studies on industrial R&D, one does not find them among those areas where companies are reporting plans for increased R&D spending in 1984. (NSF 83-327, December 15, 1983).

QUESTION 4

To what extent have general economic conditions affected private sector willingness to invest in R&D?

ANSWER 4

The evidence is mixed and the data are not entirely reliable, therefore, it is not possible to give an unqualified answer. On the one hand, there are some data to suggest that the sluggish economy lasting into early 1983 did result in somewhat lower R&D expenditures than might have occurred -- and that 1984 will show healthy increases over 1983. Yet, other data at the company level suggest that it was more a matter of slower growth than cut-backs in R&D. The need to keep abreast of rapidly advancing technology and the impact of foreign competition were cited as powerful influences for maintaining high-level R&D expenditures throughout the recession.

More generally -- in speaking to reliability of the evidence -- pending the availability of a consistent set of updated statistics from NSF, it is not possible to say much with confidence about the current overall trends and composition of R&D in industry. Extrapolations into 1984 of data for recent years are especially risky at this time because of the uncertain impacts on R&D of the economy moving first into and then out of a recession.

The currently available national R&D estimates show total industry funding of R&D as continuing to increase in 1984. There are many uncertainties in these estimates, however, which will not be resolved until data on what is actually happening in 1984 is available. The best comprehensive forecast, which has the merit of distinguishing different trends in different segments of industry, is in a special study by NSF based on interviews with industry officials from March to July 1983, and published in Science Resources Studies Highlights (NSF 83-327) dated December 15, 1983.

The NSF forecasts based on this survey show 11 percent growth in total industry funding of R&D. NSF's analysis of its estimates show that above average R&D growth rates are expected in 1984 in the medical and scientific instrument industry (23 percent), computer companies (20 percent), drug companies (16 percent), and the aircraft industry (13 percent). Near or slightly below average growth in 1984 is expected in the photographic equipment industry (12 percent), electrical and communications equipment (11 percent), and in the chemical industry, in which there is much variation but an average increase of only 9-10 percent. The lowest expected 1984 R&D

growth rates identified by NSF were for the motor vehicle industry (5 percent) and the non-computer machinery industry ("only slight"). In general the NSF study found that R&D-intensive industries are continuing to increase their expenditures for R&D and expect to make greater increases in 1984 than in 1983. The question remains open, however, whether the trends that industry spokesmen were projecting in 1983 are actually materializing in 1984.

Some similar data on R&D by industrial sector are contained in the most recent of Business Week's annual surveys of R&D spending among the nation's largest firms. These data, which are broken down by sector on a somewhat different basis than the NSF data, show reported R&D spending in 1982 and percentage changes between 1981 and 1982. Among the industries with the largest growth rates during this period are computers, computer peripherals and services, oil service and supply, drugs, and telecommunications. Consistent with NSF's forecasts for 1984 are low growth rates for the automotive and non-computer machinery industries.

QUESTIONS TO MR. GIBBONS

OTA RESPONSE TO QUESTIONS FROM THE SENATE BUDGET COMMITTEE

1. QUESTION:

OTA has indicated a need to study further the requirements for a space infrastructure. What is your opinion of the National Commission on Space Act introduced last year by Mr. Hollings to help develop policy and program options for the future direction of our space program?

OTA has previously stated a need for the kind of activity proposed in the form of S. 955, "The National Commission on Space Act."

In its June, 1982, report on Civilian Space Policy and Applications, OTA noted that the civilian space program lacks "...consistent long-term goals and clear policy initiatives, from either the executive or the legislative branches of the Government. ... Periodic, open, high-level discussion of the space program is needed to focus attention and sharpen debate on our national objectives in space.

"Several alternatives for this [discussion] are as follows:

"o ...

"o Establish a Presidential or national commission. ..."

In October, 1983, Senator Domenici, considering whether he might become a cosponsor of S. 955, wrote to NASA asking for comments on it. NASA's response, in a letter to the Senate Committee on Commerce, Science and Transportation dated December 18, 1983, was that it would oppose this bill. In NASA's judgment, a Commission such as S. 955 would establish is unnecessary.

The NASA response may be seen as indicative of the very problem to which the OTA recommendation spoke, and to which S. 955 would respond.

NASA may not recognize the need for broader input to it than is available from its internal advisory panel structure. The NASA response makes the fundamental error of asserting that the advice that the President, the Congress, and the American people at large would receive from such a National Commission would be no different in character than the advice it receives from its own internal, self-selected advisors and from external advisors with relatively narrow science and technology backgrounds, the bulk of whom are drawn from organizations that receive financial support from NASA, and who usually meet with financial support from NASA. We suggest that this view is incorrect on at least three counts.

1. The Nation's civilian space interests and activities are already broader than NASA's. NOAA and now the DOT also have important Federal civilian space interests, and the interests of our private sector, already large, are growing apace. Therefore, the recommendations on policy, goals, and objectives that any national advisory body might make would not be confined to NASA interests and activities. OTA's experience in working with a broad "blue ribbon" Advisory Panel (of the kind envisioned for a National Commission) on its civilian "space station" assessment is clear testimony to this fact. We found it mandatory, in order to bring broad judgment to bear on the issues under study, to compose our Advisory Panel of people drawn, for the most part, from outside of the space science and engineering communities. This Panel has been of great value to OTA.

2. A National Commission on Space would not report solely to NASA, nor even to the Executive and/or Legislative Branches alone; its functions would be essentially public, and its reports would be directed to Government as well as made available to the general public.
3. The composition of the National Commission on Space would certainly not (contrary to the assertion in the NASA response) be the same as that of NASA's internal advisory group, or the groups of the National Research Council that NASA cites. The latter are composed almost exclusively of scientists and engineers; the former would be drawn from a broad spectrum of U.S. public institutions and reflect a broad spectrum of U.S. public and private interests.

In testimony and presentations for over two years, OTA has been making the point that a national debate about space goals, objectives, and policies is very much needed. The fact that the NASA letter to Senator Domenici is not responsive to the questions that he asked, but rather expresses specific opposition to S. 955, suggests that NASA leaders may not truly appreciate how narrow their current advice is relative to the broad range of national interests in the civilian space area.

Finally, we would observe that even S. 955 could be strengthened -- and made more relevant to today's circumstances -- by a modest change in the language of Sec. 5. (a)(1). The relevant sentence reads: "The members appointed under this subsection shall be selected from among individuals from

State and local governments, industry, business, labor, academia, and the general population who, by reason of their background, education, training, or experience, possess expertise in scientific and technological pursuits, as well as the use and implications of such pursuits."[Emphasis added] Although it is entirely appropriate that some of the members possess such expertise, it is at least equally important that some members possess expertise in economics, marketing, international relations, and the humanities. The point is that the nation's space activities are, and should be recognized as being, wider than science and technology.

2. QUESTION:

Do you have any suggestions of another approach that might be of benefit to the Congress in shaping space policy?

Yes.

Recently, OTA has been voicing its concern over the absence of continuing, policy-related, extra-Governmental professional studies in the civilian space area. Various offices in the Executive Branch (at least NASA, NOAA, DOT, and NSF), private foundations, universities and other groups with a particular interest in our nation's space future could be encouraged to create, and underwrite, a few, small, professional groups to conduct such studies on a broad, long-term, basis.

While NASA already has at least one one-year contract study underway that addresses long-term civilian space goals, and OSTP is understood to be addressing this area also, this kind of activity should be expanded, maintained, and not confined to NASA, or even Federal Government, support.

3. QUESTION:

If the civilian R&D funding continues to decline, how can the U.S. maintain its competitive position in international science and technology with countries like West Germany and Japan?

As Dr. Carey pointed out in his statement to the Committee on Feb. 27, the current and projected rise in defense R&D as compared to civilian R&D indicates serious problems for the U.S. in maintaining its international competitive position in science and technology. OTA has examined international competitiveness in steel, electronics and biotechnology. These extensive studies all indicate a need for continued emphasis on basic civilian research, as well as a need for improved methods to hasten the transition from research to technology application.

4.(a) QUESTION:

Do you believe that a manned space station can help change the way this nation does business in space?

The acquisition of a "manned space station" could either promote or impede change in the way the United States does business in space, depending on the way in which it is acquired and the way in which it is used. (We take the word "change" to mean "improve.")

A. Acquisition

1. Change would be impeded if a "manned space station" were

acquired in the "classical" NASA fashion. This means, specifically, that:

- a) essentially all of it would be paid for with public funds; i.e., little attention would be paid to prompting the U.S. private sector to provide a substantial portion thereof;
 - b) NASA would issue detailed engineering specifications for the technology to be acquired, and would exercise close management control over the entire acquisition process, thereby unnecessarily increasing Government costs; and
 - c) NASA would seek minor cooperation, rather than close collaboration, with other countries -- with the result that there would be little capital cost sharing.
2. Change would be promoted if a "manned space station" were acquired in the same way that other, i.e., non-space, civilian public assets are acquired. This means, specifically, that:
- (a) the private sector would be prompted to develop, using its own resources, as many of the elements as it could;
 - (b) performance specifications, rather than detailed engineering specifications, would be used by the Government for the procurement of the technology that it must see developed, and NASA would not exercise close management

control over the acquisition process, but employ a procurement "reward"/"penalty" approach instead; and

- (c) true collaboration with other countries would be sought, so that capital costs (and, eventually, operating and maintenance costs) would be shared, with a resulting decrease in the cost to the U.S. taxpayers.

B. Use

1. Change would be impeded if a "manned space station" were used in the way in which other space assets have been heretofore used.

This means, specifically, that:

- (a) the Federal Government would maintain responsibility for essentially all operations and maintenance of the entire ensemble of infrastructure;
- (b) the Federal Government would itself provide essentially all in-space services at post-development marginal cost; and
- (c) any remaining services that were privately offered would be supported by the Government only by subsidy.

2. Change would be promoted if a "manned space station" were used in ways that other, i.e., non-space, public assets are used.

This means, specifically, that:

- (a) the private sector would be encouraged to assume responsibility for the operations and maintenance of as much of the in-space infrastructure as possible;
- (b) in-space services would be made widely and easily available on a fee-for-service basis, and
- (c) the Government would prompt the private sector to develop and provide new, needed, assets and services by aggregating and guaranteeing markets for them.

In brief: Change (i.e., improvement) would be promoted if NASA could recognize, and act on the view, that while it would still have the national responsibility to see that important space activities are accomplished, it no longer, necessarily, would have the responsibility to do everything itself. It would see that the demand on the public purse for the support of civilian space activities is minimized. And it would lead in prompting our private space sector to take a much greater responsibility for the provision of space assets and services, and in orchestrating international collaborative efforts.

4. (b) QUESTION

Will we, for example, be able to move away from these very expensive, one-of-a-kind types of satellites, and build more inexpensive satellites that may allow us to do some things that we have never done before?

- A. We could certainly see that any "space station", i.e., space infrastructure, and the services that it could provide, are such as to allow a re-thinking of how we design "free-flyers" so as to acquire them at the lowest, long-term cost of ownership and use.
- B. NASA, in accordance with recommendations of the Solar System Exploration Committee (SSEC) has begun to plan for a number of less costly planetary missions that utilize a common basic spacecraft design. This approach might well be extended into other areas. Any future remote sensing program, for example, might be built around a series of less costly, special-purpose satellites, each designed for a definite market segment, and all making use of a common spacecraft "bus."
- C. And we could encourage use of functionally flexible space platforms, in various orbits including geosynchronous, that provide structure, orbital location, space work crews, power, heat dissipation, telemetry and general Shuttle-and "space station"-based O&M, so as to allow users to share their assets and services and concentrate on "payloads" alone.

5. QUESTION:

Do you believe that the combined efforts [a] of building very sophisticated and costly space infrastructure, and [b] of continuing to provide below-cost space transportation to the military, could put the civilian space applications effort at risk?

- (a) In general, the space infrastructure needed to meet presently foreseeable civilian needs does not require the development of new, and therefore more costly, technology. To the extent that NASA concentrates its resources on the development of new technology for space infrastructure, professional skills, management attention, and funds will be diverted from more challenging, higher-payoff, civilian space objectives. Such objectives could be designed to stimulate the development of "cutting-edge" space technology, opening up new opportunities for social and political benefits and economic gain on Earth.

We should keep in mind that the large investments that other countries have made over the past decade in the civilian space area are now reaching the "pay-off" stage (Spacelab, Spot, Ariane, direct satellite broadcasting (DBS), ...). Five to ten years from now, if the US does not pursue particularly challenging and potentially highly rewarding space objectives and, as well, does not manage to meld, usefully, the capacities and interests of both our public and private sectors, our national position, particularly our national economic position, in the civilian space area will be at risk.

(b) NASA's policy of continuing to provide below-cost space transportation to the military will not, by itself, put the civilian space applications program at risk, although it may well divert substantial resources from them. However, there are three overriding issues regarding the relations of the Nation's civilian and military space programs that require careful deliberation.

1. The original intent of Congress, as expressed in the National Aeronautics and Space Act of 1958, seems clearly to be that a real separation of the military and civilian space programs was to be established and maintained. Does the Congress wish to maintain this separation in the future? If so, should we make it more evident than it is today who pays for which capabilities? There is strong evidence that a significant portion of NASA's current budget is directed to activities of specific value to the military (including intelligence) programs, although this fact is not made clear in the budget submissions. Obviously, if Congress were to insist that NASA's budget spell out precisely which funds serve military purposes -- and perhaps even insist that these funds appear in the Defense budget for reimbursement to NASA -- it would assist Congress in exercising its Constitutional power of the purse. On the other hand, telling the world the extent to which the military and civilian programs are intertwined could be disadvantageous: the traditional U.S. insistence that the two are separate has been an effective element of our foreign policy in the space area.

2. If the military space effort continues to grow faster than the civilian space effort (as now seems likely), the latter will come to be, and to be seen as, substantially less important than the former. Two negative consequences are likely to ensue: (1) it will become much more difficult for NASA to compete with the Defense Department for high-quality personnel and for the attention of the aerospace industry; and (2) the argument we use internationally, that our two space programs are equally important, will be undercut. One of the arguments sometimes advanced for a permanently manned "space station" program is that it would provide a politically palatable means of addressing the perceived imbalance between the military and civilian programs, and would result in important and worthwhile space assets. It seems important to test this option against other options or combinations of options.

3. Because of the already increasing demands on our limited stock of trained people and industrial capacity in the space area, a decision to initiate a major "manned space station" program is likely to result in further inflation of the costs of high-technology space programs. Since it is important to minimize this undesirable effect, such a decision should call either for a gradual phase-in of new civilian programs, to allow time for industrial expansion, or be accompanied by a stretch-out of military space programs in order to free up existing industrial capacity.



COMMERCIAL BIOTECHNOLOGY

An International Analysis

Summary



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Office of Technology Assessment

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Foreword

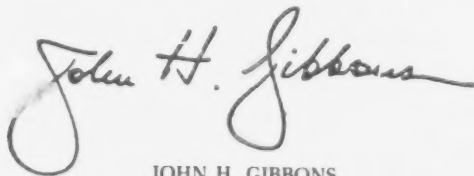
This report assessing the competitive position of the United States with respect to Japan and four European countries believed to be the major competitors in the commercial development of "new biotechnology" continues a series of OTA studies on the competitiveness of U.S. industries. It was requested by the House Committee on Science and Technology and the Senate Committee on Commerce, Science, and Transportation. Additionally, a letter of support for this study was received from the Senate Committee on Labor and Human Resources.

New biotechnology, defined in this report as the industrial use of recombinant DNA, cell fusion, and novel bioprocessing techniques, has potential applications in pharmaceuticals, plant and animal agriculture, specialty chemicals and food additives, environmental applications, commodity chemicals and energy production, and bioelectronics. In the past several years, over 100 new firms have been started in the United States to capitalize on the commercial potential of biotechnology, and large established companies in the United States, Japan, and Europe have invested in this technology.

A well-developed life science base, the availability of financing for high-risk ventures, and an entrepreneurial spirit have led the United States to the forefront in the commercialization of new biotechnology, but continuation of the initial preeminence of American companies in this field is not assured. Japan is likely to be the leading competitor of the United States, followed by the Federal Republic of Germany, the United Kingdom, Switzerland, and France.

Congressional policy options for improving U.S. competitiveness in biotechnology are identified in this report. The options pertain to Federal funding for the basic life sciences and for generic applied research, especially in the areas of bioprocess engineering and applied microbiology (including the training of personnel in these areas), financing for small entrepreneurial new biotechnology firms, and clarification and modification of particular aspects of intellectual property law, health, safety, and environmental regulation, antitrust law, and export control laws.

OTA was assisted in the preparation of this study by an advisory panel of individuals representing a wide range of backgrounds, including science, economics, financial analysis, law, labor, and new and established firms commercializing biotechnology. Additionally, over 250 reviewers from universities, the private sector, and government agencies, both domestic and foreign, provided helpful comments on draft reports. OTA expresses sincere appreciation to each of these individuals. As with all OTA reports, however, the content is the responsibility of the Office and does not necessarily constitute the consensus or endorsement of the advisory panel or the Technology Assessment Board.



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Commercial Biotechnology: An International Analysis

Introduction

In the past 10 years, dramatic new developments in the ability to select and manipulate genetic material have sparked unprecedented interest in the industrial uses of living organisms. Following the first successful directed insertion of foreign DNA in a host micro-organism in 1973, scientific researchers in the United States and other countries began to recognize the potential for directing the cellular machinery to develop new and improved products and processes in a wide diversity of industrial sectors. Potential industrial applications of novel genetic techniques include the production of new drugs, food, and chemicals, the degradation of toxic wastes, and the improvement of agricultural products. Thus, these new techniques could have a major economic impact on industries throughout the world.

Beginning around 1976, many small entrepreneurial firms were formed in the United States specifically to build on the growing body of fundamental knowledge in molecular biology and to exploit it to a profitable end. Furthermore, large established American, Japanese, and European companies in a broad spectrum of industrial sectors expanded their research and development (R&D) programs to include the new genetic techniques. In the United States, private sector investments to commercialize these new techniques exceeded \$1 billion in 1983.

This report assesses the competitive position of the United States with respect to Japan and four European countries—the Federal Republic of Germany, the United Kingdom, Switzerland, and France—believed to be the major competitors in the commercial development of “new biotechnology,” as defined below. **Although the United States is currently the world leader in both basic science and commercial development of new biotechnology, continuation of the initial preeminence of American companies in the commercialization of new biotechnology is not assured.** Japan and other countries have identified new biotechnology as a promising area for economic growth and have therefore invested quite heavily in R&D in this field. Congressional policy options for improving U.S. competitiveness in new biotechnology are identified in this report.

Definitions

Biotechnology, broadly defined, includes any technique that uses living organisms (or parts of organisms) to make or modify products, to improve plants or animals, or to develop micro-organisms for specific uses. Biological processes and organisms have been used with great success throughout

history and have become increasingly sophisticated over the years. Since the dawn of civilization, people have deliberately selected organisms that improved agriculture, animal husbandry, baking, and brewing. More recently, a better understanding of genetics has led to more effective applications of traditional genetics in such areas as antibiotic and chemical production.

This report focuses on the industrial use of recombinant DNA (rDNA), cell fusion, and novel bioprocessing techniques. To differentiate between biotechnology using these novel techniques and the more traditional forms of biotechnology, this report uses the terms "new biotechnology" and "old biotechnology," respectively. Thus, for example, traditional wine production is old biotechnology, but the use of yeast modified with rDNA techniques to produce wine with a higher alcohol content is new biotechnology. Where no specific distinction is made, the term biotechnology alone henceforth refers to new biotechnology.

Biotechnology is the most recent phase in a historical continuum of the use of biological organisms for practical purposes. Furthermore, developments arising from existing technologies are providing a base from which other technologies will emerge, and new technologies can make even the most potentially useful current technology obsolete in a short time. Of necessity, this assessment describes the development of biotechnology at a particular point in time, but it is important to emphasize that dynamic and progressive change has characterized biotechnology for the last decade. Figure 1 shows some prominent events that illustrate the rapid progress made in the development of biotechnology over the last decade. This pace is likely to continue into the 21st century.

The technologies

The novel techniques used in biotechnology are extremely powerful because they allow a large amount of control over biological systems. *Recombinant DNA technology*, one of the new techniques, can be used in a wide range of industrial sectors to develop micro-organisms that produce new products, existing products more efficiently, or large quantities of otherwise scarce products. This technology can also be used to develop organisms that themselves are useful, such as micro-organisms that degrade toxic wastes or new strains of agriculturally important plants.

Cell fusion, the artificial joining of cells, combines the desirable characteristics of different types of cells into one cell. This technique has been used recently to fuse certain cancer cells and specialized cells of the immune system to produce a cell line known as a hybridoma which produces large quantities of *monoclonal antibodies (MAbs)*. MAbs can be used in the diagnosis and treatment of disease and the purification of proteins.

Bioprocess technology, though not a novel genetic technique, allows the adaptation of biological methods of production to large-scale industrial use. **In the next decade, competitive advantage in areas related to biotechnology may depend as much on developments in bioprocess engineering as on innovations in genetics, immunology, and other areas of basic science.**

Figure 1.—Major Events in the Commercialization of Biotechnology

1973	First gene cloned.
1974	First expression of a gene cloned from a different species in bacteria. Recombinant DNA (rDNA) experiments first discussed in a public forum (Gordon Conference).
1975	U.S. guidelines for rDNA research outlined (Asilomar Conference). First hybridoma created.
1976	First firm to exploit rDNA technology founded in the United States (Genentech). Genetic Manipulation Advisory Group (U.K.) started in the United Kingdom.
1980	<i>Diamond v. Chakrabarty</i> —U.S. Supreme Court rules that micro-organisms can be patented under existing law. Cohen/Boyer patent issued on the technique for the construction of rDNA. United Kingdom targets biotechnology (Spinks' report). Federal Republic of Germany targets biotechnology (Leistungsplan). Initial public offering by Genentech sets Wall Street record for fastest price per share increase (\$35 to \$89 in 20 minutes).
1981	First monoclonal antibody diagnostic kits approved for use in the United States. First automated gene synthesizer marketed. Japan targets biotechnology (Ministry of International Trade and Technology declares 1981 "The Year of Biotechnology"). France targets biotechnology (Pelissolo report). Hoescht/Massachusetts General Hospital agreement. Initial public offering by Cetus sets Wall Street record for the largest amount of money raised in an initial public offering (\$125 million). Industrial Biotechnology Association founded. DuPont commits \$120 million for life sciences R&D. Over 80 NBFs had been formed by the end of the year.
1982	First rDNA animal vaccine (for colibacillosis) approved for use in Europe. First rDNA pharmaceutical product (human insulin) approved for use in the United States and the United Kingdom. First R&D limited partnership formed for the funding of clinical trials.
1983	First plant gene expressed in a plant of a different species. \$500 million raised in U.S. public markets by NBFs.

SOURCE: Office of Technology Assessment.

Industrial development

The industrial sector in which the earliest applications of new biotechnology have occurred is the pharmaceutical sector. Reasons for the rapid diffusion of the new techniques into the pharmaceutical sector include the following:

- Recombinant DNA and MAb technologies were developed with public funds directed toward biomedical research. The first biotechnology products, such as rDNA-produced human insulin, interferon, and MAb diagnostic kits, are a direct result of the biomedical nature of the basic research that led to these new technologies.
- Pharmaceutical companies have had years of experience with biological production methods, and this experience has enabled them to take advantage of the new technologies.
- Pharmaceutical products are high value-added and can be priced to recover costs incurred during R&D, so the pharmaceutical sector is a good place to begin the costly process of developing a new technology.

Because the pharmaceutical sector is currently most active in commercializing biotechnology, it serves as a model for the industrial development of biotechnology in much of this report. It is important to recognize, however, that the development of biotechnology in other industrial sectors will differ from its development in the pharmaceutical sector. Regulatory and trade barriers and a marketing and distribution system unique to the pharmaceutical sector, for example, limit its usefulness as a model.

Findings

Industrial applications of biotechnology

Industrial applications of biotechnology will be found in several industrial sectors, including pharmaceuticals, animal and plant agriculture, specialty chemicals and food additives, environmental areas, commodity chemicals and energy production, and bioelectronics.

The earliest industrial applications of biotechnology (i.e., during the next 5 to 10 years) are likely to occur in pharmaceuticals, animal agriculture, and specialty chemicals. Applications of biotechnology to **pharmaceuticals** being pursued at present are in the production of proteins such as insulin, interferon, and human serum albumin; antibiotics; MAb diagnostics; and vaccines for viral, bacterial, and parasitic diseases. As more is learned about hormone growth factors, immune regulators, and neurological peptides, their importance in the treatment of disease may increase dramatically. Eventually, the production of such regulatory proteins may turn out to be the largest application of biotechnology in the pharmaceutical industry.

In **animal agriculture**, biotechnology is being used to develop products similar to those being developed in the pharmaceutical industry. However, since animal producers cannot afford to purchase expensive products made with new technology, biotechnologically produced products may initially be limited to products for "high value" animals such as pets and breeding

stock. The most important products are likely to be vaccines and growth promotants.

The production of **specialty chemicals** (i.e., chemicals costing more than \$1/lb) and **food additives*** represents one of the largest opportunities for the application of biotechnology because of the diversity of potential applications. Biotechnology could potentially be used to improve existing bioprocesses such as those used in the production of amino acids. In the production of products such as vitamins and steroid compounds, which are currently made in multistep production processes involving chemical syntheses, biotechnology could provide one or more enzymatic conversion processes to increase the specificity of currently used chemical conversions. Generally, complex products, such as enzymes and some polysaccharides, can only be made economically using bioprocesses. Several companies in the United States are pursuing biological production of specialty chemicals, but most specialty chemicals currently produced biologically are made almost exclusively in Japan and Europe, and these countries intend to pursue new applications for specialty chemical production.

Applications of rDNA technology to **plant agriculture** are proceeding faster than anyone anticipated 3 to 4 years ago. Some important traits of plants, including stress-, herbicide-, and pest-resistances, appear to be rather simple genetically, and it may be possible to transfer these traits to important crop species in the next few years. Other traits, such as increased growth rate, increased photosynthetic ability, and the stimulation of nitrogen fixation, are genetically complex, and it is likely to be several years before plants with these characteristics developed with rDNA technology will be ready for field testing. Micro-organisms that interact with plants offer possibilities for genetic manipulation that may be more near-term. For instance, it may be possible to manipulate micro-organisms to produce pesticides or inhibit frost formation.

Environmental applications of biotechnology include mineral leaching and metal concentration, pollution control and toxic waste degradation, and enhanced oil recovery. These applications may take longer to reach the market, because little is known of the genetics of the most potentially useful micro-organisms. Additionally, regulation is expected to be a major factor influencing development of this area, because these applications use micro-organisms that are deliberately released into the environment. The nature and extent of this regulation remains uncertain, and this uncertainty may deter some firms from entering the field, thus slowing development.

Commodity chemicals now produced from petroleum feedstocks could be produced biologically from biomass feedstocks such as cornstarch and lignocellulose. Commodity chemical production from cornstarch will probably occur before production from lignocellulose because of the high energy inputs necessary for the solubilization of lignocellulose. Although the technology exists now for the cost-effective biological production of some commodity chemicals such as ethanol, the complex infrastructure of the com-

*Food additives are considered together with specialty chemicals because many (though not all) food additives are also specialty chemicals, e.g., amino acids and vitamins.

modity chemical industry will probably prevent the replacement of a large amount of commodity chemical production using biotechnology for at least 20 years. This distant time horizon is due more to the integrated structure of the chemical industry, its reliance on petroleum feedstocks, and its low profit margins than to technical problems in the application of the biotechnology.

In the area of **bioelectronics**, biotechnology could be used to develop improved biosensors or new conducting devices called biochips. Sensors that use enzymes for detecting specific substances are available now. However, their use is limited by the narrow range of substances they detect and by their temperature instability. Biotechnology could be instrumental in the development of more versatile sensors that use enzymes or MABs. Better sensors would be especially useful in the control of industrial bioprocesses. Biotechnology may also make it possible to construct devices that use proteins as a framework for molecules that act as semiconductors. The anticipated advantages of these biochips are their small size, reliability, and the potential for self assembly. The production of biochips, however, is one of the most distant applications of biotechnology.

The U.S. competitive position

A well-developed life science base, the availability of financing for high-risk ventures, and an entrepreneurial spirit have led the United States to the forefront in the commercialization of biotechnology. For the most part, the laws and policies of this country have made it possible for industrialists and scientists to capitalize rapidly on the results of basic research in biotechnology conducted in the university system and government laboratories. The relative freedom of U.S. industry to pursue a variety of courses in the development of products has also given the United States a comparative advantage. The flexibility of the U.S. industrial system and the plurality of approaches taken by entrepreneurial new biotechnology firms (NBFs) and established companies in the development of products have facilitated the rapid development of biotechnology in the United States.

Japan is likely to be the leading competitor of the United States for two reasons. First, Japanese companies in a broad range of industrial sectors have extensive experience in bioprocess technology. Japan does not have superior bioprocess technology, but it does have relatively more industrial experience using old biotechnology, more established bioprocessing plants, and more bioprocess engineers than the United States. Second, the Japanese Government has targeted biotechnology as a key technology of the future, is funding its commercial development, and is coordinating interactions among representatives from industry, universities, and government. **The United States may compete very favorably with Japan if it can direct more attention to research problems associated with the scaling-up of bioprocesses for production.**

The European countries are not moving as rapidly toward commercialization of biotechnology as either the United States or Japan, in part because the large established pharmaceutical and chemical companies in

Europe have hesitated to invest in biotechnology and in part because of cultural and legal traditions that tend not to promote venture capital formation and, consequently, risk-taking ventures. Nevertheless, several of the large pharmaceutical and chemical companies in the United Kingdom, the Federal Republic of Germany, Switzerland, and France will surely be competitors in selected product areas in the future because of their prominent position in world sales of biologically derived products. Additionally, the increased interest shown recently by the British Government in biotechnology may speed its development in the United Kingdom.

The United States could have difficulty maintaining its competitive position in the future if several issues are not addressed. If U.S. Government funding for basic life science research continues its decline, the science base, which is the source of innovation in biotechnology as well as in other fields, may be eroded. U.S. Government funding of generic applied research,* especially in the areas of bioprocess engineering and applied microbiology, is currently insufficient to support rapid commercialization. U.S. Government funding for personnel training in these areas may also be insufficient. Additionally, clarification and modification of certain aspects of U.S. health, safety, and environmental regulation and intellectual property law may be necessary for the maintenance of a strong U.S. competitive position in biotechnology.

Analysis of international competitiveness in biotechnology

As of the end of 1983, only a few products of new biotechnology had reached the marketplace—notably human insulin, some MAb diagnostic kits, and some animal vaccines. Since the technologies are still emerging and most biotechnology products and processes are in early development, traditional parameters of international competitiveness are difficult or impossible to estimate. Instead of examining the classical measures of competitiveness, therefore, OTA's analysis of international competitiveness in biotechnology examines the aggregate industrial activity in biotechnology in both domestic and foreign firms and 10 factors that might be influential in determining the competitive position of the United States and other countries with respect to the commercialization of biotechnology. The following five countries were identified as the likely major competitors of the United States in the commercialization of biotechnology: Japan, the Federal Republic of Germany, the United Kingdom, Switzerland, and France. Although companies from many countries will have biotechnology products in world markets, these five countries were selected because of their research capabilities in biology and their existing capabilities in old biotechnology and because, as a whole, their companies are most likely to reach world markets first with biotechnology-produced products.

*Generic applied research, which is nonproprietary and bridges the gap between basic research and applied research, is aimed at the solution of generic problems that are associated with the use of a technology by industry.

OTA's industrial analysis was approached from three perspectives:

- the number and kinds of companies commercializing biotechnology,
- the markets targeted by industrial biotechnology R&D, and
- the interrelationships among companies applying biotechnology and the overall organization of the commercial effort.

Ten factors were identified as potentially important in determining the future position of the United States and other countries in the commercialization of biotechnology:

- financing and tax incentives for firms;
- government funding of basic and applied research;
- personnel availability and training;
- health, safety, and environmental regulation;
- intellectual property law;
- university/industry relationships;
- antitrust law;
- international technology transfer, investment, and trade;
- government targeting policies in biotechnology; and
- public perception.

The relative importance of each of the factors to competitiveness today is shown in figure 2. Some factors could become more important as the technology matures and more products reach the marketplace.

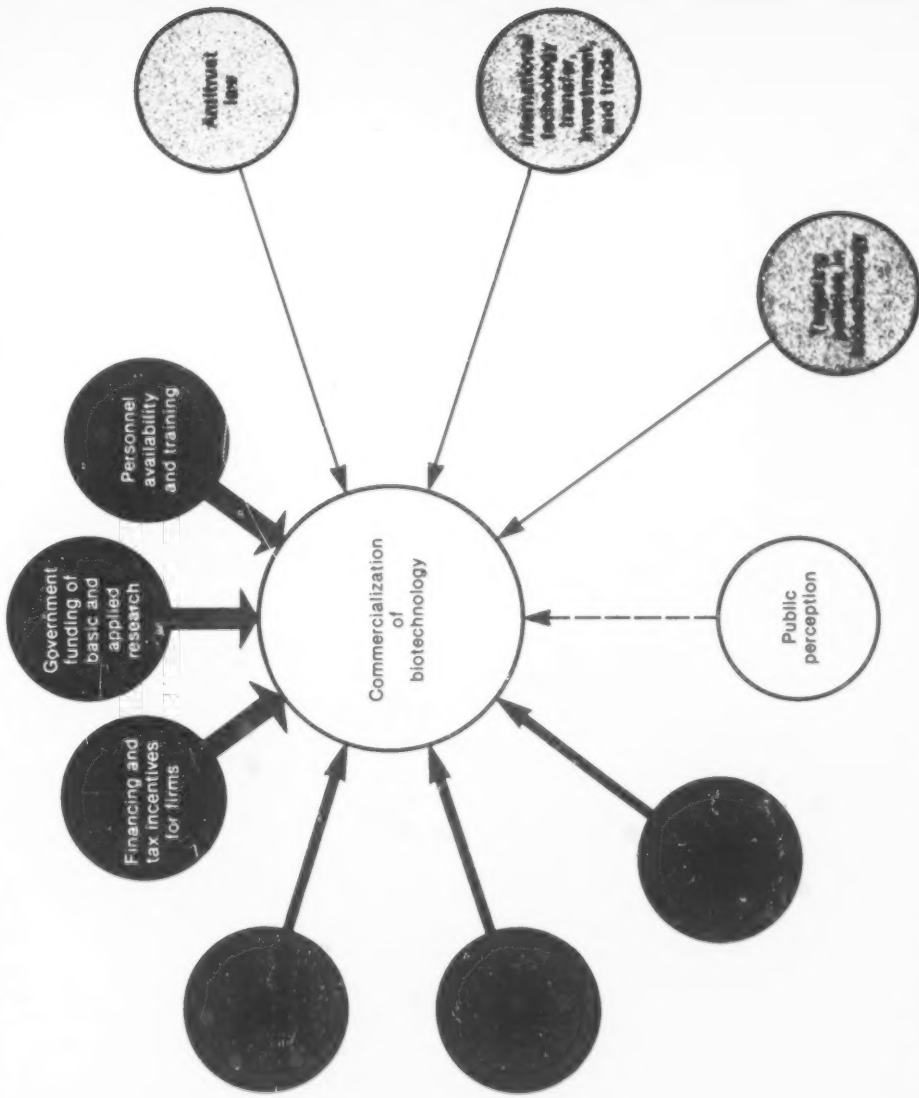
OTA's principal findings with respect to the types and activities of firms commercializing biotechnology, the factors potentially important to international competitiveness in biotechnology, and other considerations such as historical patterns of industrial commercialization, the lack or abundance of particular natural resources, and the tendency toward risk taking in each country are presented below.

Overview of U.S. and foreign companies commercializing biotechnology

U.S. and foreign efforts to develop and commercialize biotechnology differ substantially in character and structure. In the United States, two distinct sets of firms are pursuing commercial applications of biotechnology—NBFs and established companies. NBFs are entrepreneurial ventures founded specifically to commercialize innovations in biotechnology. The established companies are generally process-oriented, multiproduct companies in traditional industrial sectors such as pharmaceuticals, energy, chemicals, and food processing. Figure 3 illustrates the percentage of U.S. firms pursuing biotechnology R&D in specific application areas.

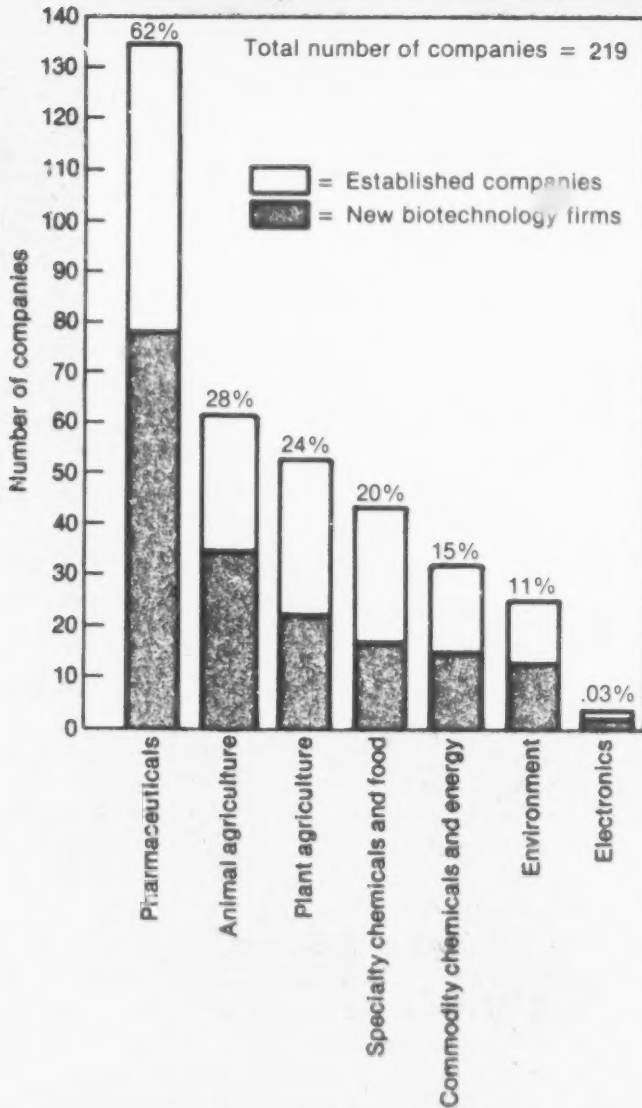
U.S. efforts to commercialize biotechnology are currently the strongest in the world. The strength of U.S. efforts is in part derived from the unique complementarity and competition that exist between NBFs and established U.S. companies in developing biotechnology for wider commercial application. At present, most NBFs are still specializing in research-oriented phases of development, precisely the commercial stage where they excel. Through their R&D efforts, NBFs are contributing to innovation, ex-

Figure 2.—The Relative Importance of Factors Affecting the Commercialization of Biotechnology



SOURCE: Office of Technology Assessment.

Figure 3.—Percentage of Firms in the United States Pursuing Applications of Biotechnology in Specific Industrial Sectors*



*The total percentage of firms exceeds 100 percent because some companies are applying biotechnology in more than one industrial sector.

SOURCE: Office of Technology Assessment.

pansion of the U.S. research base, technology diffusion, and encouragement of technical advances through the increased domestic competition they create. The established companies, on the other hand, have assumed a major share of the responsibility for production and marketing of, and, when necessary, obtaining regulatory approval for, many of the earliest biotechnology products—the commercial stages where their resources are

strongest. Recently, more and more established U.S. companies have been investing in their own research and production facilities, so the role of established companies in the U.S. biotechnology effort is expanding. Since established companies control the later stages of commercialization for many new products being developed through production and marketing agreements with NBFs, they will also have considerable control over the pace at which these new products reach the market. **Whether the dynamism arising from the competition and complementarity between NBFs and established companies will continue giving the United States a comparative advantage in product introduction remains unclear.** Some established companies, for example, might have disincentives to market new products that compete with products they already have on the market.

The commercial objectives of biotechnology R&D vary across national boundaries, as do the types of firms pursuing them. In the United States, commercial research projects appear primarily focused on pharmaceutical and plant and animal agriculture, and American competitive vigor in these application areas is correspondingly strong. Much of the investment in animal agriculture has been made by NBFs whereas much of the investment in plant agriculture has been made by major U.S. companies in agricultural chemicals and seed production.

In Japan, the Federal Republic of Germany, the United Kingdom, Switzerland, and France, biotechnology is being commercialized almost exclusively by established companies. **The Japanese consider biotechnology to be the last major technological revolution of this century, and the commercialization of biotechnology is accelerating over a broad range of industries, many of which have extensive bioprocessing experience.** The Japanese general chemical and petroleum companies especially are leaning strongly toward biotechnology, and some of them are making rapid advances in R&D through their efforts to make biotechnology a key technology for the future. Japanese companies have launched a competitive drive to enter international pharmaceutical markets. Furthermore, Japanese companies are world leaders in large-scale plant tissue culture, and the Ministry of International Trade and Industry has identified secondary compound synthesis from plants as a major area for commercialization. Unlike the United States, Japanese companies appear to be dedicating a great deal of biotechnology R&D to specialty chemical production, an area where they are already internationally prominent.

In Europe, large pharmaceutical and chemical companies, many of which already have significant strength in biologically produced product markets, are the major developers of biotechnology. The inherent financial, production, and marketing strengths of these companies will be important as the technology continues to emerge internationally. To the extent that large companies in Europe began their commercialization efforts later than U.S. companies and may also lack the dynamism and flexibility to compete with the combined efforts of NBFs and established companies in the United States, European companies could initially be at a competitive disadvantage. The United Kingdom's major pharmaceutical companies are among the leading

producers of biologically produced products, however, and their expertise in bioprocessing is impressive. Furthermore, the United Kingdom possesses some of the strongest basic research in interdisciplinary plant sciences. Whether or not the basic research will be commercialized successfully is difficult to predict.

U.S. competitive strength in biotechnology will be tested when large-scale production begins and bioprocessing problems are addressed. Pharmaceutical markets will be the first proving ground for U.S. competitive strength. The Japanese have extensive experience in bioprocess technology, and dozens of strong "old biotechnology" companies from several industrial sectors in Japan are using new biotechnology as a lever to enter profitable and expanding pharmaceutical markets. In addition to competing against Japanese companies, U.S. pharmaceutical and chemical companies will be competing against pharmaceutical and chemical companies of Western Europe, all of whom expect to recover their biotechnology investments through extensive international market penetration. There seem to be fewer European companies than Japanese companies strong in biotechnology now, but the competitive strength of European multinationals such as Hoechst (F.R.G.), Rhone Poulenc and Elf Aquitaine (France), ICI, Glaxo, and Wellcome (U.K.), and Hoffmann-La Roche (Switzerland) in the long run should not be underestimated.

Factors potentially important to international competitiveness in biotechnology

MOST IMPORTANT FACTORS

The three factors most important to the commercial development of biotechnology are financing and tax incentives for firms, government funding of basic and applied research, and personnel availability and training.

Financing and Tax Incentives for Firms.—The availability of venture capital to start new firms and tax incentives provided by the U.S. Government to encourage capital formation and stimulate R&D in the private sector are very important to the development of biotechnology in the United States. Since 1976, private venture capital in the United States has funded the startup of more than 100 NBFs. Many of these firms have already obtained second- and third-round financing, while others, still seeking additional funds, are relying heavily on the currently strong stock market, R&D limited partnerships, and private placements to fund research, production scale-up, clinical trials, and early product development. Between March and July of 1983, 23 NBFs raised about \$450 million. R&D limited partnerships in biotechnology are expected to total \$500 million in 1983 and \$1.5 billion in 1984. Corporate equity investment in NBFs, although now diminishing, has also been an important source of financing for the new firms. From 1977 to August 1983, corporate venture capital supplied over \$350 million to NBFs in equity investments alone.

The future performance of NBFs now extensively using the stock market and R&D limited partnerships for financing may influence the availability of financing for other firms seeking capital in the future. Most NBFs still

have negative earnings records. If some of these companies do not begin to manufacture soon in order to generate product revenues, investors may lose confidence in many of the firms' ability to commercialize biotechnology.

In the United States, venture capital is generally more difficult to obtain for later rounds of financing than for initial rounds, in part because venture capitalists are more eager to invest in earlier rounds to maximize their investment returns. The difficulty in getting subsequent financing for production scale-up may prove to be an insurmountable problem for some NBFs; the ability to self-finance may still be 5 to 10 years away.

Of all the six competitor countries, the United States has the most favorable tax environment for capital formation and small firm financing. Tax incentives, more than direct government funding, are used in the United States to stimulate business and encourage R&D expenditures. Thus, R&D limited partnerships, low capital gains tax rates, R&D tax credits (due to expire in 1985), and subchapter S provisions all benefit small firms.

In Japan and the European competitor countries, venture capital has played a very minor role in the commercialization of biotechnology, because these countries do not have tax provisions that promote the formation of venture capital and investment in high-risk ventures. As a consequence, few NBFs exist outside the United States. The established foreign companies that have initiated efforts to commercialize biotechnology can finance R&D activities through retained earnings. Established companies also have access to financing from bank loans. Additionally, the governments of Japan, the United Kingdom, the Federal Republic of Germany, and France have provided the private sector with public funds for biotechnology.

Tax incentives relevant to established companies commercializing biotechnology are those that stimulate R&D investments and those that encourage capital formation. Corporate tax rates are also important. For purposes of international comparisons, the most reliable basis is the overall effective corporate tax rate. Unlike statutory rates, the effective rate takes into account different definitions of taxable income and treatments of depreciation. Available studies suggest that Switzerland, followed by Japan and the United Kingdom, have the lowest effective corporate tax rates. The effective rates in the United States, the Federal Republic of Germany, and France are higher and about equal.

After the United States, Japan has the most financing available for companies using biotechnology. **The Japanese Government has made the commercialization of biotechnology a national priority and is financing cooperative interindustry biotechnology projects.** Most of the established companies commercializing biotechnology in Japan have at least one bank as a major shareholder that provides the company with low-interest loans for R&D. Wealthy individual investors in Japan, although few in number, have also provided some risk capital for new ventures.

Government Funding of Basic and Applied Research.—The objective of basic research is to gain a better understanding of the fundamental aspects of phenomena without goals toward the development of specific

products or processes. Such research, which is usually conducted by academic researchers who receive government funds, is critical to maintaining the science base on which a technology rests and to stimulating advances in a technology. The objective of applied research is to gain the knowledge needed to supply a recognized and specific need through a product or process. Such research is usually funded by industry. Generic applied science can be viewed as bridging a gap between basic science done mostly in universities and applied, proprietary science done in industry for the development of specific products. Such research is aimed at the solution of general problems that are associated with the use of a technology by industry. Generic applied research areas in biotechnology, for instance, include development of bioreactors, screening of micro-organisms for potential products, and better understanding of the genetics and biochemistry of industrially important micro-organisms. Support of basic science and of generic applied science is generally viewed as the responsibility of government, because it ultimately contributes to the public good and because it is high risk and too expensive for individual firms.

Of the competitor countries, the United States, both in absolute dollar amounts and in relative terms, has the largest commitment to basic research in biological sciences, although this commitment has decreased in the last few years. On the other hand, the U.S. Government's commitment to generic applied research in areas such as bioprocess engineering and applied microbiology is relatively small. In fiscal year 1983, the Federal Government spent \$511 million on basic biotechnology research* compared to \$6.4 million on generic applied research in biotechnology. Over the past several decades, the U.S. Government has decreased its commitment to generic applied research areas, while increasing its commitment to basic research. This policy has contributed to a widening scientific gap between purely basic research funded by the U.S. Government and short-term, relatively product-specific applied research funded by private industry. **The relatively low level of U.S. Government funding for generic applied research in biotechnology may cause a bottleneck in this country's biotechnology commercialization efforts.**

Like the United States, the Federal Republic of Germany, the United Kingdom, and Switzerland have a strong basic science base. Furthermore, the governments of Japan, the Federal Republic of Germany, and the United Kingdom fund a significant amount of generic applied science in biotechnology. Perhaps because Japan is able to rely on the United States and other countries to prove the early feasibility of new technologies for commercialization, the Japanese Government devotes more public funding to the solution of generic applied science problems than to basic research. This strategy worked well in the semiconductor industry, and Japan may very well attain a larger market share for biotechnology products than the United States because of its ability rapidly to apply results of basic research available from other countries.

*From \$20 million to \$30 million of the \$511 million may actually be generic applied research, because definitions of biotechnology differ among agencies.

Personnel Availability and Training.—Adequately trained scientific and technical personnel are vital to any country's industrial competitiveness in biotechnology. For the most part, countries with good science funding in a field also have a good supply of well-trained people in that field.

The commercial development of biotechnology will require several specific types of technical personnel. Especially important categories include specialists in rDNA and MAb technology such as molecular biologists and immunologists; specialists in scale-up and downstream processing such as microbiologists, biochemists, and bioprocess engineers; and specialists for all aspects of biotechnology such as enzymologists and cell culture specialists. Scale-up personnel will become more important as companies using biotechnology move into production.

The United States currently has a competitive edge in the supply of molecular biologists and immunologists able to meet corporate needs, in part because the U.S. Government has provided substantial funding since World War II for basic life sciences research in U.S. universities. **The supply of Ph. D. plant molecular biologists and scale-up personnel in the United States, however, may be inadequate.** Like the United States, the United Kingdom and Switzerland have funded life sciences well and have a sufficient supply of basic biological scientists. Unlike the United States, Japan, the United Kingdom, and the Federal Republic of Germany maintained a steady supply of both industrial and government funding for generic applied microbiology and bioprocess engineering in the past few decades and have adequate personnel in these fields. In Japan and the Federal Republic of Germany, slight shortages of molecular biologists and immunologists exist; Japanese companies are seeking to train personnel abroad. France appears to have shortages in all types of personnel.

The training of personnel is important to the continuing commercialization of biotechnology. The United States has, for the most part, good training programs for basic scientists. Specialists in plant molecular biology may be in short supply now, but training in this discipline can be readily achieved with interdisciplinary programs in biology departments in universities. On the other hand, the United States does not have more than a handful of training programs for personnel in the more applied aspects of biotechnology, nor does it have Government programs, such as training grants, to support training in these fields. The training of bioprocess engineers and industrial microbiologists will require greater interdisciplinary cooperation between engineering and biology departments within universities.

The United States promotes and funds the training of foreign nationals in laboratories in the United States, yet funds very little training of Americans abroad. Foreign countries have many significant research programs in biotechnology that U.S. researchers could be visiting were funding available.

FACTORS OF MODERATE IMPORTANCE

The three factors found to be of moderate importance to international competitiveness in biotechnology are health, safety, and environmental regulation; intellectual property law; and university/industry relationships.

Health, Safety, and Environmental Regulation.—The only government controls directed specifically toward biotechnology are rDNA guidelines adopted by the six competitor countries.* Thus, OTA's analysis of the effect of health, safety, and environmental regulation on competitiveness in biotechnology focused on the drug laws for humans and animals and, to a lesser extent, on laws governing the production of chemicals and the deliberate release of novel organisms into the environment. Japan has the most stringent health and safety regulation for pharmaceuticals and animal drugs, followed by the United States. Switzerland appears to be the most liberal. Thus, **the regulatory environment favors the European companies over those of Japan and the United States reaching their own domestic markets sooner for pharmaceuticals and animal drugs.** In the United States, the Food and Drug Administration has taken the position that rDNA products whose active ingredients are identical to ones already approved or to natural substances will still need to go through the new product approval process. However, data requirements may be modified and abbreviated. This appears not to be the situation in the competitor countries, although there have not been definitive pronouncements by their regulatory agencies. **In all the competitor countries, there is some uncertainty as to the environmental regulation governing the deliberate release into the environment of genetically manipulated organisms.**

Intellectual Property Law.—The areas of intellectual property law most relevant to biotechnology are those dealing with patents, trade secrets, and plant breeders' rights. These areas work together as a system; an invention may be protected by one or more of them, and if one has disadvantages, a company can look to another. Thus, to the extent that a country's intellectual property law provides several alternative ways for companies to protect biotechnological inventions, it is more likely to be competitive in biotechnology.

In the final analysis, **the U.S. intellectual property system appears to offer the best protection for biotechnology of any system in the world,** thus providing the United States with a competitive advantage with regard to this factor. This advantage results from the fact that the system provides the widest choice of options for protecting biotechnological inventions, the broadest scope of coverage, and some of the best procedural safeguards. Some modifications and clarification of certain aspects of U.S. intellectual property law, however, might help U.S. competitiveness in biotechnology.

University/Industry Relationships.—University/industry interactions are a very effective way of transferring technology from a research laboratory to industry. Such interactions promote communication between industrialists and academicians that benefits both sides.

Interest in the commercial potential of biotechnology has dramatically increased university/industry interactions, especially in the United States. Established U.S. and foreign companies have invested substantial amounts

*They are essentially voluntary and directed primarily at research. Their containment and oversight provisions have been substantially relaxed since they were originally adopted, and this trend is expected to continue. The United States has the most liberal guidelines, whereas Japan has the most stringent.

of money in U.S. universities doing work in biotechnology in order to gain a "window on the technology." **The various agreements in the United States appear to be working well, and fears concerning conflict of interest and commingling of Government and industry funds have diminished.**

Neither Japan nor the European competitor countries identified in this assessment have as many or as well-funded university/industry relationships as the United States does, but varying degrees of cooperation do exist. In Japan, the ties between university applied research departments and industry have always been close. Additionally, the Japanese Government is implementing new policies to encourage closer ties between basic research scientists and industry. In the Federal Republic of Germany, the Federal Ministry of Science and Technology (BMFT, Bundesministerium für Forschung und Technologie) has a history of promoting close contact between academia and industry and is cosponsoring with industry many projects important to biotechnology. Switzerland encourages communication between individuals in academia and industry, and relationships are easy to maintain. The universities in both the United Kingdom and France have had very few ties with industry in biotechnology, but the governments of both countries have recently set up programs designed to encourage university/industry relationships.

LEAST IMPORTANT FACTORS

The least important of the 10 factors analyzed were found to be antitrust law; international technology transfer, investment, and trade; government targeting policies in biotechnology; and public perception. Any of these factors, however, could become important as the technology develops and products reach the marketplace.

Antitrust Law.—The antitrust laws of the United States and the other major competitors in biotechnology are generally similar in that they prohibit restraint of trade and monopolization. However, the foreign laws generally provide for exemptions and vest much discretion with the enforcement authorities, especially in Japan. Thus, in practice, they are often less restrictive than in the United States. In addition, countries differ in the consequences to firms for failure to comply with antitrust laws. In the United States, the consequences of noncompliance can be more severe than in the competitor countries because private, in addition to Government, suits can be brought against alleged antitrust violators, and treble damages are assessed if a violation is found.

U.S. companies commercializing biotechnology face no major antitrust compliance problems, because the lack of concentration and the absence of measurable markets mean that most types of joint research arrangements would not be anticompetitive. Technology licensing agreements can raise antitrust concerns, but these generally are not unique to biotechnology. However, there is some degree of uncertainty about the scope and applicability of the antitrust laws to R&D joint ventures and licensing agreements. This uncertainty, plus the expense of litigation and

the threat of treble damages, could deter some activities that might lead to innovation in biotechnology, thus limiting the ability of U.S. companies commercializing biotechnology to exploit their technology.* For these reasons, the current U.S. antitrust laws may have some modest adverse effect on biotechnology.

International Technology Transfer, Investment, and Trade.—Technology transfer across national boundaries can be promoted or inhibited by export control laws and by laws governing international joint ventures and technology licensing. **U.S. export control laws, which are the most restrictive of the competitor countries, may have a slightly adverse effect on the competitiveness of U.S. companies commercializing biotechnology because they could cause delays that result in the loss of sales to foreign competitors.** Furthermore, these laws may need clarification as biotechnology products proceed to the marketplace because there is some uncertainty as to what products or data will be restricted.

Foreign exchange and investment control laws help prevent access to domestic markets and technology by foreign firms. The United States has the fewest controls, whereas Japan and France have the most control mechanisms. Thus, **U.S. markets are the most accessible to foreign firms and therefore the most vulnerable to foreign competition,** whereas Japanese and French markets are the least accessible and the most protected against foreign competition.

Trade policy is not important to the commercialization of biotechnology today because of the small number of products that have reached the market and because trade in biotechnologically produced products is not likely to raise any unique trade issues. However, trade policy will become increasingly important as more products reach the marketplace, especially in the area of pharmaceuticals, where significant nontariff barriers, such as conforming to country standards with appropriate testing data, quality control standards, and packaging requirements exist.

Government Targeting Policies in Biotechnology.—The governments of four of the competitor countries—Japan, the Federal Republic of Germany, the United Kingdom, and France—have instituted comprehensive programs to help domestic companies develop certain areas of biotechnology. Though targeting policies are not of great importance when compared to other competitive factors, they could tip the balance of a competitive position in the future.

Public Perception.—As a factor influencing competitiveness, public perception of the risks and benefits of biotechnology is probably of greater importance in the United States than in the other competitor countries. Historically, the American public has been more involved than the public in Japan or the European countries with issues pertaining to genetic research and technology (e.g., issues regarding the safety of rDNA research).

*In addition, the rigid application of certain "per se rules" in the area of licensing may actually lead to anticompetitive results.

In all of the countries, the effect of public perception as a factor influencing competitiveness will be greatly increased in the event of an accident or perceived negative consequence of biotechnology.

Other influences on competitiveness in biotechnology

Three other considerations that should be noted in evaluating competitive positions in the commercialization of biotechnology are, for each country, historical patterns of industrial commercialization, the availability of natural resources, and cultural attitudes toward risk-taking.

Historically, some countries have moved research results into commercialization rapidly, more rapidly than others. This observation is especially important in this analysis of biotechnology. For instance, the United Kingdom has a good science base, trained personnel, and industries that could be using these new technologies; however, the United Kingdom may not be a major contender in the commercialization of biotechnology mainly because it does not have a history of rapid commercialization. On the other hand, both the United States and Japan historically commercialize scientific advances rapidly.

The absence or presence of certain natural resources may also determine how quickly a country moves into the commercialization of biotechnology. For instance, Japan does not have domestic petroleum resources. Because biomass can potentially replace petroleum as a feedstock in the chemical industry, Japan may be more interested in applying biotechnology in the chemical industry than a country, such as the United Kingdom, which has domestic petroleum resources. The United States, a country that produces excesses of grain each year, may find commercialization of processes that can use grain as a feedstock particularly attractive. However, it is too early to predict the degree to which natural resources will determine the commercial applications of biotechnology a country may undertake.

The United States, as a general rule, is not averse to risk-taking in business. Risk-taking is a part of the American lifestyle. European countries are more risk averse. Since investment in biotechnology is considered risky, countries that are more risk averse are less likely to move rapidly to commercialize biotechnology.

Conclusion

The unique complementarities between established and new firms, the well-developed science base, the availability of finances, and an entrepreneurial spirit have been important in giving the United States its present competitive advantage in the commercialization of biotechnology. In order to maintain this advantage, increased funding of research and training of personnel in basic and generic applied sciences, especially bioprocess engineering and industrial microbiology, may be necessary. The United States may also need to be concerned with the continued availability of finances

for NBFs until they are self-supporting. On most of the other factors influencing competitiveness, the United States rates very favorably, although there are changes in laws and policies that could potentially improve or help maintain the U.S. competitive position. These changes include clarification and modification of particular aspects of intellectual property law; health, safety, and environmental regulation; antitrust law; and export control law.

Japan will be the most serious competitor of the United States in the commercialization of biotechnology. Japan has a very strong bioprocess technology base on which to build, and the Japanese Government has specified biotechnology as a national priority. The demonstrated ability of the Japanese to commercialize developments in technology rapidly will surely manifest itself in biotechnology.

The Federal Republic of Germany, the United Kingdom, Switzerland, and France lag behind the United States and Japan in the commercialization of biotechnology. The European countries generally do not promote risk-taking, either industrially or in their government policies. Additionally, they have many fewer companies commercializing biotechnology. Thus, **the European countries are not expected to be as strong general competitors in biotechnology as the United States and Japan.** In markets for specific products, including some pharmaceuticals, specialty chemicals, and animal agriculture products, however, some European companies will undoubtedly be strong international competitors.

Issues and options

To improve the competitive position of the United States, legislation could be directed toward any of the 10 factors OTA identified as influencing competitiveness, although coordinated legislation directed toward all of the factors might be more effective in promoting U.S. biotechnology efforts. Chapters in this report discuss options that are specific to the development of biotechnology. Some of the options presented are limited and straightforward, such as some options concerning health and safety regulation and R&D limited partnerships. Other options are much broader with potentially large political, ethical, and financial considerations. Some examples of the latter include establishing university/industry cooperative research centers, regulating the deliberate release of genetically manipulated organisms into the environment, and changing patterns of research funding. Clearly, the adoption of some options may occur more rapidly than the adoption of others.

Policy options in some areas are not specific to biotechnology but apply to high technology or industry in general. These options are to:

- improve U.S. science and engineering education and the retraining of industrial personnel,
- change U.S. antitrust law to promote more research collaboration among domestic firms,

- regulate imports into the United States to protect domestic industries,
- regulate the transfer of technology from the United States to other countries, and
- target specific industries or technologies for Federal assistance.

There are many arguments for and against these options that are beyond the scope of this report. Because of their broad applicability to industry in general, these options are not discussed in this report. It is important to note, however, that legislation in any of these areas could affect the development of biotechnology and potentially have a large influence on the U.S. competitive position.

NOTE: Copies of the full report, "Commercial Biotechnology: An International Analysis," can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, GPO stock No. 052-003-00939-1.

General Information

Information on the operation of OTA, the nature and status of ongoing assessments, or a list of available publications may be obtained by writing or calling:

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NATIONAL SECURITY AND INTERNATIONAL AFFAIRS

TUESDAY, MARCH 6, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 10:08 a.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Symms, Gorton, and Chiles.

Staff present: Stephen Bell, staff director; Charles Flickner, senior analyst for international security and international affairs; and Paul Heilig, analyst for national security.

For the minority: Richard N. Brandon, staff director; and Doug Cook, senior analyst for defense.

Chairman DOMENICI. The committee will come to order.

I understand Senator Chiles will be along shortly.

John, I have a bit of a cold, so I got a late start start this morning. I apologize for being late.

OPENING STATEMENT OF CHAIRMAN DOMENICI

Let me say to you, Senator Tower, it is a pleasure to have you here today, and to hear your views on the defense budget. By now, most of us on this committee, especially the chairman, know how you feel about the defense budget.

Before we begin, I would like to spend just a few moments, if I may, and provide perspective on the defense budget.

FISCAL YEAR 1976 DEFENSE SPENDING LOWEST IN 25 YEARS

From the peak in fiscal year 1968 until the trough in fiscal year 1976, spending on national defense declined by one-third in real terms. Those who are critics of that analysis are quick to point out that 1968 was the peak spending year for the Vietnam war and we should have had a decline. That is all true, but let us look at it a little further.

After 1968, the defense spending declined steadily for 8 years, until there was a slight real increase in 1977. After World War II, the demobilization process lasted only 4 years before defense spending began to rise again. The important thing is the depth of the spending decline, not the length. In fiscal year 1976, real defense spending had sunk to a level so low that one has to go back to the period of the post-World War II demobilization, 1951, to find a lower level.

In other words, the fiscal year 1976 level of defense spending represented a 25-year low in real dollars. Added to this is the fact that the peak of defense spending in the late sixties did not serve to modernize our forces, since a large portion of that equipment was either lost or left on the battlefield.

No one can forget the devastation that this war caused our troop morale and on our national attitude toward the military.

The result of this on military effectiveness was severe. In Europe, we had what commonly were referred to as hollow units, fighting forces were lacking both manpower and essential equipment. The slumping dollar was putting many of our troops in a severe financial bind, and I remember you telling us about that Chairman Tower. A large number of them were forced to live on the local economy because housing was in short supply. All of their monthly salaries, in many instances, went just to pay their rent.

20,000 ENLISTED PERSONNEL QUALIFIED FOR FOOD STAMPS

At home, things were not much better; 20,000 or more enlisted men and women, at one time, were qualified for food stamps. The low point came on April 12, 1980, when the *Canisteo* (AO-99), a Navy-combat-support ship, was scheduled to leave on a mission and could not get underway because of a shortage of petty officers in the engineering department. This was symptomatic of a decade-long exodus of skilled people from the military.

To my knowledge, this was the only time in modern history that a major U.S. military unit failed to attempt a mission for any reason. Fortunately, we have a different situation today.

I will not go into the many measures of improvement that can be quoted; that would take too long, and you really do not need to get into the technical issues to describe the dramatic improvement. All you have to do is simply look at a soldier. What you see is a young man or woman who is better educated, better trained, better equipped, and better motivated than the soldiers of 5 years ago, 10 years ago.

I want to say to you, Chairman Tower, you have been one of the leaders in this effort and I think this Nation owes you a significant debt of gratitude. Our Government is often criticized for being sluggish, slow to react, yet it has been less than 4 years since the day that the *Canisteo* could not leave the dock in Norfolk, and the dramatic improvement which has taken place throughout our military is already there for anyone to witness.

This miraculous turnaround is in no small respect, a tribute to your leadership. I want to take this opportunity, your last appearance, obviously, before this committee as chairman of the Armed Services Committee, to thank you for what you have done for our country.

I can think of no greater tribute than the fact that when you retire from the Senate at the end of this session, respect for the U.S. soldier will be at its highest level in two generations.

Thank you very much, and I look forward to your testimony.

Senator Hatch has a statement that he would like submitted for the record.

[The statement of Senator Hatch follows:]

PREPARED STATEMENT OF SENATOR HATCH

Senator Tower, I am pleased to have you with us this morning. We need your considerable expertise. We need your advice not only about defense spending levels per se but, perhaps even more importantly, on how to approach the question of defense spending and make it an integral, stable part of a sound and consistent foreign policy clearly reflecting United States national interests. I am glad that your testimony speaks to these larger issues.

I sometimes fear it is easy to forget that national security, and the national defense capability which preserves it, is essential for maintaining the benefits and privileges of American citizenship which we all cherish. Unfortunately, however, national security does not come cheaply, and its costs are often easier to identify—and target, for those who would do so—since defense is one of those few governmental functions that can and should be done only at the national level. Since defending our national security is so crucial and so costly, however, we absolutely must ensure that all our defense dollars are wisely and efficiently spent.

I am concerned that the Congress itself—not just, for example, procurement inefficiencies at the Pentagon—may be inadvertently responsible both for weakening our national security and preventing the most efficient spending of our defense dollars. Yearly or periodic vasillations on defense spending commitments, considering budget numbers before evaluating how to meet national security threats, and imposing legislative requirements on defense procurement practices which themselves comprise the efficiency of defense spending all come to mind. For instance, are we not, perhaps, kidding ourselves by stretching out some defense spending, saving money in the short-run but spending *more* in total in the long-run?

Of course we need a balance between protecting our national security and rational defense spending. And national defense is not the only national problem on which we must spend the taxpayers' dollar. Yet, false economies, much less false protestations of economy, must be avoided.

I welcome your recommendations for reasonable defense spending policies—not just recommended spending figures—in order to obtain a coherent, effective foreign and national security policy. We may, in particular, need some frank talk from you about what we sacrifice in our national defense and in effective defense spending if we impose false economies on our defense budget.

Chairman DOMENICI. Senator Tower you may proceed.

STATEMENT OF HON. JOHN TOWER, A U.S. SENATOR FROM THE STATE OF TEXAS

Senator TOWER. Thank you, Mr. Chairman, for your very generous remarks.

I do very much appreciate the opportunity to present to the committee, for the third and final time as chairman of the Armed Services Committee, my personal observations on our country's military requirements.

In preparing for this hearing, I had given thought to updating testimony presented over the last 2 years, wherein I outlined many of the current and future challenges to our foreign policy, emphasized the need to continue rebuilding our defense posture, and identified some of the practical and financial pitfalls that prevent efficient execution of the defense program in an unstable defense budgeting environment.

IMPLICATIONS OF WIDENING GAP SHOULD WEIGH HEAVILY IN NATIONAL PLANNING

I commend these issues to you once again; they are central and enduring. Clearly, the problem of redressing the current military imbalance with an adversary that still maintains a broader based and more aggressive weapons modernization program is just as persistent today as it ever has been. The foreign, domestic, and economic implications of a widening gap between the relative military

capabilities of the United States and the Soviet Union should weigh heavily in our national planning—including that done by this committee—for the foreseeable future. We will do the country a great disservice if we avoid this central problem and its enormous implications for the Nation's future well-being.

On second thought, however, I concluded that these issues will play, unfortunately, an extremely limited role, if any, in the context of the immediate search for a solution to this year's budget impasse. The plain truth is that Congress has not listened to these arguments over the past 2 years, and probably will not seriously consider them in its deliberations on the President's fiscal year 1985 budget. Despite this administration's best efforts to present a defense budget based on visible threats and long-term security requirements, the Congress is determined to consider defense issues only in the context of near-term affordability.

This is an old, but I sense, growing problem, one that is now polarizing the relationship between Congress and the President on the issue of national defense and is frustrating efforts to develop and execute a balanced and stable defense program.

Insofar as the Congress is part of the problem, it must be part of any solution. This has caused me to reflect upon a national security agenda for the Congress that might assist in reestablishing fundamental points of reference for leaders of both branches of Government and of both parties, as we attempt to secure the long-term interests of the United States in a volatile and uncertain world. This agenda has five important elements, from congressional self-examination and reform to consensus building and leadership. We should begin by reviewing the proper role of Congress in setting national priorities and formulating the Federal budget.

REVIEW OUR RELATIONSHIP TO THE EXECUTIVE BRANCH

Holding the power to tax and spend, Congress, of course, has played, and will continue to play, a major role in the Federal budget process. But in more recent years some in Congress have assumed an almost sanctimonious attitude that I believe vastly inflates our individual and collective competence.

Some have taken to ignoring Presidential budgets—not just parts of them, but whole budgets. Rather than working our will through the committee system, we ask the President to “send us a more realistic budget,” or we barter back and forth in highly informal, politicized, and public “negotiations.” Members of Congress, even freshman Members, write their own prescriptive budgets for the entire Federal Government.

So, the first priority should be to assess the basic relationship of the Congress with the executive branch. The Congress may decide that these current trends are appropriate. In fact, as the chairman of an authorizing committee, no one has had a greater interest than I have in protecting the prerogative of congressional oversight. However, I suspect that such a review would highlight several key, constitutionally derived limitations.

We are a relatively unorganized group of 535 individuals with no real executive authority, whose collective decisionmaking capabilities are diffused and painfully limited. Our knowledge of, and re-

sponsibility for, governing Federal agencies is also limited. Our Government was organized to include only one executive branch, and the taxpayers should be paying for only one.

It is a weak government indeed that is ruled exclusively by the lowest common denominator of its legislature and the perpetual acquiescence of its executive. No Senator or Congressman is elected to serve all the people. Before we reject it out of hand, we must acknowledge and respect the need in our form of government for Presidential leadership, lest we presume to set a course for the Nation substantially at odds with that which he has proposed. A President's statement and agenda of national priorities is not inviolate but, in principle, I believe it should carry more weight than that of any committee of Congress.

After reviewing in general terms our proper role in setting national priorities and formulating the Federal budget, the Congress should turn to an internal reassessment of its increasing involvement in defense and foreign policy.

RECONSIDER CURRENT CONGRESSIONAL TRENDS

Here again, I am concerned about current trends in Congress. When the President convened a bipartisan commission to address social security issues, its results were accepted and enacted into law. While similar commissions have been organized on strategic forces and Central American policy, their results and recommendations still face repeated debate and challenge. When we in Congress act upon difficult issues such as taxes and social security we tend not to want to revisit them anytime soon. However, this does not seem to hold true in defense and foreign policy. It is not my view that the work of bipartisan commissions should necessarily be rubberstamped by the Congress. I do believe, however, that the work of such outside experts on important long-term problems in defense and foreign policy deserve as much serious consideration as that given to the resolution of domestic problems.

The area of arms control is another example of how our responsibilities for congressional oversight are taken to the extreme in areas far removed from our immediate constitutional duties. Too few can resist the temptation to publicly advise the President on how to negotiate with the Soviet Union and propose their own schemes for arms control. In the recent past, more often than not, congressional intrusion has played the foil to U.S. negotiating positions, while the Soviets wait stoically for further U.S. concessions at the bargaining table. Many times, the source of our intrusion in foreign policy is domestic politics; that is, the desire to fulfill the narrow wishes of America's many ethnic minorities, or to enhance one's credibility in the media.

In defense policy, the Congress—occasionally including my own committee—is engaged in too much micromanagement at the expense of the broader review of defense requirements and priorities. Moreover, Congress itself is often the source of the restrictive rules, regulations, and guidelines that prevent the efficient use of taxpayer dollars. The Defense Authorization and Appropriation Acts contain over 100 general provisions, many of which tell the Depart-

ment of Defense what it cannot do to spend defense dollars more wisely.

The provisions of the Davis-Bacon Act require the payment of prevailing wages, usually union rates, for contracting on Federal construction projects. If Davis-Bacon were eliminated, the fiscal year 1985 military construction program, if approved intact, would cost roughly \$300 million less than has been requested.

In attempting to protect Federal employees, the Congress also restricts DOD's ability to contract-out for various services. The additional cost to the taxpayers exceeds \$500 million in budget authority over a 3-year period.

And, of course, base closures and realignments—correctly viewed as legislatively infeasible—are worth billions over time.

In addition, congressional action on individual defense programs can also be a primary cause of increased costs. We have stretched out programs, and even continued those for which there is no longer a valid military requirement, such as the A-10 aircraft. In some cases we have promoted dual-sourcing where the real demand is barely sufficient to support one producer; or insisted upon sole-sourcing where competition would be excluded, and where competition is desirable.

Many of these restrictions, and they are almost too numerous to count, amount to congressionally mandated waste. It is also interesting to note that while Congress has never had a stronger grip on defense management than it has today, we have never complained louder about waste, fraud, and abuse. While I will continue to try to seriously address these issues, I will not be moved prematurely by those who decry the Defense Department's so-called waste, fraud, and abuse, and so propose enormous cuts in the defense budget, but in fact fail to support the legislative changes necessary to achieve reforms.

Addressing this larger problem head-on—that is, the lack of congressional self-restraint—is perhaps the precursor to a third item on the agenda.

CONSIDER LEGISLATIVE REFORMS

After looking back to our constitutional roots and comparing them with current congressional practices, I believe the Congress should be willing to consider legislative reforms, such as reorganization of the committee system and the congressional budget process, to remove unnecessary layering and overlapping jurisdictions.

This committee has already received testimony from many witnesses on potential changes to the congressional budget process, and I will devote more thought to this issue in the coming months. For now, I can only say that it is getting somewhat embarrassing, in responding to questions about reform of this budget process, to explain that we are so bogged down in the process that we haven't got the time to consider changing it.

Without making reference to any specific proposal for legislative reform, I would clearly be inclined to inject the current system with a greater capacity for institutional leadership and self-discipline. I believe the need for such leadership is clear. During the last 15 years, the average years of service in the Senate has de-

clined from 11.6 to 8.5 years, the lowest average since 1955. The 97th Congress had a greater proportion of Senators serving first terms—56 percent—than any Congress since 1923. The drift of power away from the full committee and toward subcommittees has thus been recently combined with a period of higher turnover and declining experience and longevity among Senators.

In addition, we have too many committees with overlapping jurisdictions. The 92 hearings held by the Armed Services Committee last year accounted for only 54 percent of the Senate hearings in which the Department of Defense presented testimony. I speak with a vested interest, but also, I believe, in the interests of the Senate in arguing that the committees of greatest expertise should be given more exclusive responsibility for recommendations to the Senate. It should also be evident that, except in the review of conference agreements, the Senate need not vote on the same issue more than once a year. Serious consideration ought to be given to whether or not we really need a separate authorization and appropriation process, and whether their consolidation might not result in a reduction in the congressional workload, and in more cohesive and clear statements of legislative intent.

FIDELITY AND LEADERSHIP ARE NEEDED

If the Senate can reassess its relationship with the executive branch, move away from the current tendencies toward narrow self-interest, and reorganize itself to speak more clearly on issues of national importance, then I believe we would be prepared to offer the kind of leadership for the country that was envisioned in the Constitution.

Senator Russell, the esteemed chairman under whom I was privileged to serve back in the days when I was a junior member of the Armed Services Committee, once asked a colleague about the results of recent elections. The colleague replied that his margin of victory over the years had been steadily climbing, and he was now getting over 85 percent of the vote. Russell responded to the effect that this margin of victory was much too high for a Senator, because it showed that he was doing too much following and not enough leading. The more time we spend in the Senate, he argued, the more leadership we owe the Nation.

And so, a fourth item on the national security agenda is the need for Congress, particularly the Senate, to provide greater leadership, and to cultivate among our constituents a greater appreciation for America's role in the world, and the broad requirements of our defense and foreign policy.

This will undoubtedly be a considerable challenge. Somewhere along the way, we have failed to impart to the current generation, including many in Congress, an adequate appreciation of international affairs. While many claim to understand the dangers and costs of war, too few are schooled in the balance of diplomatic and military arts required to prevent it. Rather than providing background and insight to America's long-term interests, too many Members return from their factfinding trips abroad with "clientitis," an affliction generally associated with junior Foreign Service officers.

Leadership and statecraft have a special place in the Senate, but they do not come naturally in our political system. In my view, we must work harder to strike the proper balance between moving the country in the direction our constituents want it to go—frequently toward disengagement and isolationism—and leading the Nation toward where we must go if we are to maintain a global political and military balance of power in the years ahead. This, indeed, is our highest duty. The direction in which the people want the Nation to go gives us license, in my view, to make some determination about how we achieve that direction.

REBUILD BIPARTISAN CONSENSUS ON DEFENSE AND FOREIGN POLICY

All these thoughts, Mr. Chairman, are focused on what I believe is one of the Nation's highest priorities: rebuilding a bipartisan consensus on defense and foreign policy.

In foreign policy, the results of our rancorous disagreements are all too obvious. In defense, while the results are less open to public view, they are no less detrimental.

The current impasse on defense is largely the result of contrasting approaches to the strategic problem of how best to meet our international obligations. The administration maintains that these obligations, and the military requirements identified to support them, should provide the basis for the defense budget request. Conversely, the Congress generally seems to argue that domestic politics and available resources should determine how much is enough for defense.

In my view, we must soon come to a resolution of these differences. In the last 3 years the Congress has made major reductions in the defense budget—in fiscal year 1982, a reduction of \$7 billion, in fiscal year 1983, \$18 billion, and in fiscal year 1984, \$17 billion—and it appears as though substantial reductions in fiscal year 1985 are inevitable. We, in Congress, complain about mismanagement and waste in the Pentagon and yet it is these large annual funding changes which make sound program management impossible and cost overruns a certainty.

I would characterize the immediate future of the defense program, in financial and programing terms, as very unstable. The Department of Defense is planning for future increases beyond what appears to be politically feasible; and some in Congress are considering reductions from the President's request well beyond the bounds of prudent risk. In reaching the correct budget figures for fiscal year 1985 and the outyears I would emphasize four important objectives: Consensus, commitment, stability, and steadiness of purpose.

I hope that we in the Congress and the administration, can approach this problem with open minds; the administration sensitive to the need to restore a bipartisan consensus on national defense, and we in Congress true to our constitutional obligation to provide for the common defense.

There will always be risks in compromise, but the potential long-term benefits to the nation could make it well worth the effort.

Thank you, Mr. Chairman.

I am prepared to respond to questions.

Chairman DOMENICI. Senator Tower, I think I can say this with all honesty.

The last of your statements before this committee, the one you just gave—you have given some great ones, but this is the best. I thank you for it. Obviously all of us in our work here individually and as members of committees, and even as chairmen of committees, from time to time, need somebody to tell us the way it is as you have.

CONSENSUS SHOULD BE ARRIVED AT

I had a rather amazing experience with reference to the notion of some additional consensus in foreign policy. I am not an expert at all, as you know, but I was speaking in one of our cities where there was a nice mix of military and civilians, maybe 50 military and 150 to 200 civilians. In the course of the speech, an unprepared speech, I mentioned that America could do a lot more with a lot less, by way of military expenditures, if the military knew what America wanted of them. Sooner or later we ought to arrive at a consensus, I said.

It was almost spontaneous, the 50 military men did not wait until the end of the speech, they stood up and applauded all by themselves, including a couple of colonels, and a general.

I would say to you, however, while I tend to agree with you on the problem of overlapping jurisdictions, the appropriation/authorization dilemma that you have described; and then the additional dilemma that this committee provides for all of them; that you should be proud of the large percentage of the President's budget that has been enacted.

Surely, the President would like to have received more but my numbers indicate that from 1980 to 1985, we will have doubled the outlays that the Federal Government puts out for defense and I know you would respond that that is not a measurement of need, just a measurement of what has happened.

But I would suggest that after many years where 1 percent growth or 2 percent growth and, gosh, 3.5 percent real growth was an incredible achievement, to have doubled from \$135 billion to \$270 billion, in the midst of a very serious recession is a pretty significant achievement.

I also would say, again, while percentages are irrelevant in terms of discernible needs, in each of the Reagan years, 93 to 98 percent of the President's request was granted by the Congress even with all of the commotion which you describe. That is a pretty good achievement, I would think, and you are in no small way responsible for those results in this Senator's opinion.

SAVINGS IN DEFENSE COULD BE ACHIEVED

Having said that, I would ask you, Senator, since you think there are a number of items in the defense budget that we put in there, Congress, that the Secretary of Defense did not want and President did not want, would it be worthwhile.

Senator TOWER. I think it is an interesting item to consider and I think that we could achieve some savings in defense if the President had such power as far as the defense budget is concerned.

There are a number of programs in which individual members have a vested interest. Defense does have a positive economic impact, if it did not, you would not have so many Senators and Congressmen vigorously defending the programs and establishments in their respective districts and States.

Chairman DOMENICI. So you think there may be some resistance?

Senator TOWER. So defense has got to be good for the economy.

If you figure that nobody is going to close a base in his district or his State, or close down a defense plant, you have got to consider that it has a positive impact on the economy, or at least Congress thinks it does, and with Members of Congress thinking in terms of cutting defense spending, they are talking about spending in somebody else's bailiwick, and not their own.

Chairman DOMENICI. Senator Chiles.

Senator CHILES. Thank you, Mr. Chairman.

Senator Tower, the work that you have done over the years for defense trying to promote the consensus you address in this statement is certainly something that I think we all have to recognize. I happen to agree with you that trying to keep a national consensus for defense and a bipartisan one is something that is tremendously important.

I guess the problem gets down to how do we do that? I think one of the ways to do that, of course, is to show we are getting the most for our dollar. Everybody talks about the waste, fraud, and abuse. It is a heck of a lot easier to talk about it than it is to try to do something about it.

You have been doing some work in your committee trying to get to that problem and to do something about it.

I had a group in my office just this morning and of course the first thing they said—that happened to be a group that was concerned about whether I was going to do anything that was going to cut revenue sharing—and they said, why did you not just take some money out of defense for all that waste that we see there and leave us alone in revenue sharing?

Of course, I was telling them, everybody talks about the waste but there has been no way of trying to precisely determine what and where it is to be found.

OVERSIGHT MUST BE CONSTANTLY EXERCISED

Let's get away from some of the publicity we see about the spare parts. I know that is blown up a lot. We have seen that wrench so many times. But how do we deal with the problem of the cost of spare parts? What do we do about waste and inefficiencies?

Senator TOWER. Well, I think we have to exercise constant oversight. I do not believe that Congress should abrogate its responsibility for oversight, but I think sometimes we do the wrong thing. It seems politically popular to adopt some measure that is on the face of it, addressed to clearing a problem of waste, fraud, and abuse which does not actually do so, but simply involves the Congress in the micromanagement of the Department of Defense.

Sometimes we, therefore, become a part of the problem.

Now, I believe that the present Secretary of Defense, whatever one may criticize him for, has certainly made a good faith effort to

get at cost overruns, to get at excessive charges for spare parts and that sort of thing. Our committee has been actively engaged in this. I have very quietly intervened personally in one particular instance that resulted in a defense contractor returning some \$430,000 to the Defense Department for spare parts overcharges, when they were not even legally bound to do so. In fact, some of our automatic data processing capability in the purchasing agencies of the Department of Defense is antiquated, is not adequate to the test but that is what I believe we are getting a handle on, now.

The point is: Nobody can really calculate what the costs of waste, fraud and abuse is. And I think you will find it is probably not as great as a lot of people are led to believe, unless you could come up with a specific dollar amount, you should not dock defense by x number of dollars and say, well, let us cut \$5 billion out for waste, fraud, and abuse when you really do not know what that is actually costing us and, two, some of these problems are problems that have to be addressed over a period of months, or even years. They cannot be dealt with immediately. We are now going more to fixed price contracts, we are making defense contractors eat a portion of cost overruns, if not all of them, in many instances. So I think that we are moving to a conclusion of the problem and I think, too, there is another aspect of this and that is—and Mr. Spinney, you know a lot of people quote things from the Spinney report, but there is one aspect of the Spinney report that I do not hear anybody quoting very much, and that is, you have to adequately capitalize defense up front. In other words, you have to spend more to bring more efficiency into the system, to encourage broadening the defense industrial base, providing for more competition.

A lot of people do not want to compete for defense contracts because they do not know whether Congress is going to cut the production line next year, or reduce it, or whether they are going to make any money off of it or not. And so I think more competition amongst suppliers to prime contractors is a part of the answer.

DEFENSE DEPARTMENT RESISTANT TO COMPETITION

Senator CHILES. You trigger me there, because I happen to agree with you 100 percent. I had a chance to go in the Procurement Commission some years ago, when I first came to the Congress and spent a couple of years sitting on that Commission.

One of the things I found at the Commission is that the Defense Department, more than any other agency continually, resisted the reforms to encourage competition. The Office of Federal Procurement Policy tried to referee disputes between some of the agencies and tried to provide less in the way of sole source buying, and to go to functional specifications as opposed to detailed specifications. We buy a lot of things in Government, and not all of them are related to defense. We used to have specifications for the purchase of grits. Well, the homemaker does a pretty good job of buying grits off the shelf. But we saw that, in these detailed specifications, many times were crafted so that only one outfit was able to win the grit bid. The specs were tilted.

Do you think we still have that kind of resistance in the Defense Department to go to competition?

I happen to think competition is the best policeman on the block if you can get really good competition.

Senator TOWER. I think any administration that takes over the Defense Department, be it Democratic or Republican, regardless of how honest and motivated, has difficulty in getting a handle on this massive bureaucracy down there that is made up of professional civil servants.

That is true in any executive department, not just Defense, and Presidents come to the office with the idea that, I'm going to get a handle on this and trim all the waste out of the Federal bureaucracy and make it function more efficiently and they leave office still business as usual.

USE MORE MULTIYEAR CONTRACTING

So you have got that problem that pervades our whole Government process but we do need to do more dual sourcing, we need to have more production, efficient production rates. You know, if you cut the production rate on an F-15, for example, as is being proposed by some, what it is going to do is cost you an additional \$2 million a copy for the airplane. So it is just that simple, that the lower your production rate, the more you give up in economy of scale, and two, I think another thing that we should go more into is multiyear contracting for the things for which there are validated military requirement.

The things that we know we are going to have to have. We go to multiyear contracting, we can achieve savings. So there are many things that we in the Congress can do. I think we should maintain constant oversight to make sure that the Department is functioning as we think it should function and is being a proper steward of the taxpayers' dollars.

But, you know, sometimes we mandate, say, dual sourcing when it is not economical to do it. You do not produce enough of a item to justify dual sourcing. You pay a startup cost for a second producer and you end up paying more for the item.

In other instances where competition would be desirable because some powerful Member of Congress has vested interest in a single source, we single source it where it should be competed. We only have one company that makes the M-1 tank engine, for example.

Senator CHILES. Under the current tax code with the indexing in place, Federal tax revenues will be held at a constant 19 percent of GNP. Even at full employment, outlays grow to over 24 percent of GNP. That is a gap of 5 percent and that is structural deficit and that is, of course, where our problem is coming from.

The fastest growing part of those outlays, even at our 5 percent growth rate, would be defense where those outlays are going to grow from 6.2 percent of GNP in 1984, to 7.5 percent in 1989, because of the growth that we already have in there.

If we go with the President's budget, it is going to be even higher because he is at 12 or 13 percent rather than 5. That extra 1.3 percent of GNP will amount to about \$75 billion a year by 1989, and over the 5 years, a cumulative total it will be about \$200 billion.

Now, if we budget what the Pentagon says they need, or what the President's budget has, without looking at a constraint of our

total resources, then of course, we are finding ourselves in this dilemma.

How do we pay for that extra defense? Do we just cut some other areas, or do we have to be willing to vote some taxes to pay for that difference?

Senator TOWER. Why say that we have to raise taxes to pay for defense?

Why not say we have to raise taxes to pay for a lot of services and spending functions the Government engages in that are not constitutionally required of the Federal Government? There is a specific charge to the Congress to maintain an Army and a Navy. There is not a specific charge to the Government to do a lot of other things it spends money for.

FIRST PRIORITY IS SECURITY OF AMERICAN PEOPLE

The first national priority is the security of the American people, I would think. Now if that is not our first national priority, then I think in due course we are going to be confronted by one superpower in this world, we will no longer be a superpower, and we will have to accept whatever happens to us.

Irving Kristol once remarked that the future economic health of the United States may depend far more on what our external policy is and I include defense in that, than what our internal policy is. And in fact, even if we go to the extent that you suggest there, even if we fully fund the President, we will never get back to the percentage of GNP nor to the percentage of the national budget that was dedicated to defense in the Kennedy administration.

The fact is, we pushed a bow wave of modernization ahead of us for years and we undermined defense in the decade of the seventies. We are trying to play catch up now. That is why we have this big budget. As a matter of fact, if we would have accepted the recommendations of the outgoing Ford administration on what projected defense spending should be, we could probably spend much less right now, and really would not need the increase in real terms that we have right now.

We would just spend an additional \$36 billion over the 4 years of the Carter administration. That is no reflection on the Carter administration. The Congress underfunded the Carter recommendations, too, except for 1980 when we in the Congress took the initiative to add money to defense. So the fact is, we are paying now for what we failed to do years ago. If we are going to have a modern capability—

Senator CHILES. But we are not paying now, we are borrowing now, for what we failed to do.

Senator TOWER. I understand your point, but I think you're borrowing just as much to pay for other things that the Government does. It is misleading to assign the need for Federal borrowing to only one part of the budget.

Chairman DOMENICI. Senator Symms.

Senator SYMMS. Thank you, Mr. Chairman.

And thank you, Senator Tower, for being here this morning. I would have to say one thing about it, at least we have not reached

the point where we pay people not to produce tanks or not to produce airplanes as we do in other Government programs.

Senator TOWER. Actually, sometimes you do.

If you cancel a contract prematurely, you pay a contracting out-cost or penalty.

HANDLING THREAT WOULD HAVE ENORMOUS DRAWDOWN ON RESOURCES

Senator SYMMS. Senator, one of the questions that I am often asked, and I would like to hear your opinion on it, is with respect to the oil pipeline out of the Persian Gulf. We have the proposed Rapid Deployment Force. A general who is now retired, for whom I have a great deal of respect referred to one day in a conversation as the slow deployment force. I read an article yesterday in the newspaper that suggested that even if the Air Force got the C-17's as they are requesting, and all the C-5's that we have funded, that we would still be short 16 million ton-miles per day by 1989.

Do we really have the capability to handle a threat in that part of the world where the Soviets are so close to it physically?

What do you say to people when they ask you that?

Senator TOWER. I think that probably we do have that capability, but only by drawing down on resources elsewhere. Even if we could deploy as rapidly as we would like to, and get all the assets there that we need, it would cause an enormous drawdown on resources elsewhere.

For example, the on-going Persian Gulf crisis has resulted in substantial drawdown of our fleet resources elsewhere. So the North Pacific, for example, is not as well defended as it once was.

If you had simultaneous conflicts in areas that are identified as areas of national interest to the United States, you would be hard put to meet all the demands on our Armed Forces. Sometimes out of inferior resources you can concentrate superior assets and defeat an enemy, but what are you giving up for it?

WE MUST MAINTAIN TECHNOLOGICAL EDGE OVER SOVIETS

Senator SYMMS. Well, in addition to that, there is a great deal of argument about how technically complicated our equipment should be.

What is the answer to that?

I read an article yesterday in the New York Times, which is a newspaper that might be suspect in some parts of Texas, I am sure, but the headline story was about the fact that our Army does not have enough of the sinews that are necessary to fight a war with, like spare parts, tires, ammunition, the basic things, because we are in a position of having to put so much money into modernization.

What is the answer to that?

Senator TOWER. Well, I do not think that is a good argument. To begin with, you are going to have less maintenance costs on a new piece of equipment than an old piece which perhaps the parts are not even being made anymore.

And, two, we have increased the funding, and we in Congress took our own initiative on that in 1980, and now those spare parts

are beginning to come through the pipeline. Unfortunately, we cannot realize the benefit of increased spending for spare parts overnight. It takes 1 year or 2 for them to get into the pipeline and get out to the user.

I would say we are in much better shape on that now, we have fewer hangar queens, as they call them in the Air Force, that is a plane that sits in the hangar and you cannibalize it for other parts to keep others flying.

SUSTAINABILITY STILL INADEQUATE

Senator SYMMS. Are you telling me, that if called upon for conventional warfare—

Senator TOWER. We have higher sustainability now than we did have but it is still not high enough. We are still moving in that direction. We have better sustainability but it is still inadequate to meet all of our commitments and we have many commitments throughout the world.

You also mentioned high tech weaponry. We have to go to high technology, because the Soviets are doing it. They have got a quantitative edge on us in terms of numbers, and we are not building to their numbers. We certainly do not want to build to their manpower numbers, nor do we want to build to their numbers of tanks, tactical aircraft, or artillery tubes. What we have to do is maintain a technological edge, and it is going to cost us more money in real terms to do that. It should also be recognized that the Soviets are incorporating technology that they steal from us, or read about in the newspapers, in their weapons systems faster than we do.

Why? Because they do not have to go through congressional approval or the bureaucratic process of DOD and all that kind of thing, they can just haul off and build something. If it does not work, they can make improvements on it and try again.

Senator SYMMS. Well, I would have to say that if our F-16's and F-15's work as well against Soviet fighters as the Israelis' did against the Syrians, that we could equalize the number advantage pretty rapidly.

Senator TOWER. I think that is a pretty good argument for high technology systems. I think the Falklands war is another good example, where the British were inadequate in terms of certain sophisticated equipment, but that was offset by a high tech missile called the AIM-9L Sidewinder, that enabled them to take on the land-based air of Argentina and prevail over it.

Senator SYMMS. You mentioned in your testimony this morning, that Congress should close down unnecessary bases. I know one time you sent out a letter and you did not get too many responses from Members of the Congress about suggestions for base closings in their States.

I happen to be from a State that only has one primary military base.

Senator TOWER. And we are looking at it, too, Senator.

Senator SYMMS. Of course, fortunately for the State of Idaho, it is far from anyplace else, so strategically, it stands up pretty well in the Air Force's long-term plans. So I have not had the problem of

opposing a base closing in my State, but you have not had much cooperation from the Congress over the years on this issue.

Senator TOWER. Well, during the course of my testimony, I talked about the fact that there is a lot of congressionally mandated waste in the military. That is only part of it.

Davis-Bacon is a part, contracting out restraints, a number of things.

NUMBER OF PEOPLE AT PENTAGON COULD BE REDUCED

Senator SYMMS. I have a friend that I talk to about this occasionally, who works over at the Pentagon. He is an officer in the Army, in a technical area—air defense—and he tells me that if we could reduce the number of inquiries from the Congress to the Pentagon, we could probably reduce the number of people at the Pentagon.

He and I were calculating that there are about 30,000 military people at the Pentagon, enough to almost mount out a light infantry division. He thinks they would never be missed if they did not have to answer all these inquiries of the Congress.

How much truth is there in that?

Senator TOWER. I think there is a great deal of truth, when you consider that the Defense Department comes down here to the Senate and testifies before the Budget Committee, the Budget Committee is one of the least offenders, because you only hear them one time or twice. Of course, we have—last year we had some 92 hearings in the Armed Services Committee with DOD. We have to do that.

Most of those are subcommittee hearings, because we have to line item these requests.

But then you have got the Committee on Governmental Affairs, you have got Appropriations, you have got Foreign Relations, they all call on DOD for testimony.

You have got the same thing replicated in the House so they do have to spend an awful lot of time down here because accountability, and the responsibility for their accountability is so diffused to the Congress.

Senator SYMMS. Thank you very much.

Thank you, Mr. Chairman.

Chairman DOMENICI. I wanted to tell Senator Tower, talking about Congressional Committees, El Salvadore's economy is going to go bankrupt when we quit sending delegations down there. They had 78 Congressional delegations in less than a year, official in nature; they are in a civil war.

Senator TOWER. Probably the cost of the delegations going down there would have bought a lot of military equipment for the government down there.

Chairman DOMENICI. But, seriously, they are not going to know what to do with their hotels and all if that settles down.

Besides, they do just what you said, they go down there and come back and they all have an answer for it. They had a picture with a rebel leader and he is a pretty good guy.

SECURITY ASSISTANCE FOR FRIENDLY NATIONS IS NEEDED

Senator SYMMS. Mr. Chairman, I would just say one thing about that.

From my viewpoint as one who has traveled in many parts of the world, if we could decide which side we are on, it would cost us half as much money as it does.

I went to Africa recently and visited Jonas Savimbi. If we would give those freedom fighters just a little bit of help over there, they would take that whole part of Africa for us, and we would not have to fight the Soviets. Sometimes I believe we do not have brains enough in this country to support our friends.

Senator TOWER. Well, Senator, you have touched on something that I have some rather strong convictions about, and that is, that we must—you asked if we could defend our interests in a particular part of the world. The question is, spread as thin as we are, what if we are confronted by simultaneous threats?

The fact is, we need to spend more money on security assistance.

I would be almost willing to see some reductions in the defense budget if I knew that those reductions would go to security assistance for friendly nations. It is far better to build an indigenous military capability to deal with local and regional threats than for us to deploy our own people over there. For example, a small country like Tunisia is threatened by Colonel Qaddafi. The Tunisians need a handful of tanks, a few C-130's, and a handful of F-5s; but the security assistance process drags on and on and we reduce security assistance, so what is going to happen?

Someday are we going to have to go in there and pull our chestnuts out of the fire simply because we didn't adequately fund security assistance.

Senator SYMMS. Then, if we get our friends going in our direction, we would not let that happen, but unfortunately, and it happens time and time again around the world because we don't help our allies.

So I agree with that, I hope we can figure out whose side we are on. I think the same thing is true in Central America. If we stop namby-pambying around, we could win in Central America.

Senator TOWER. Then we have to take some risk on the security assistance. I would not suggest for one moment that there are not some risks involved, but they are risks that we have to take.

Chairman DOMENICI. Senator Tower, we greatly appreciate your appearing before us and frankly, I look forward to attempting to resolve the issue that is before us for the 1985 budget on defense as soon as possible.

I think we have get something done this year in a number of fronts, and somehow or another we are at a point that we have to do it by way of a package and defense is going to be part of it. Hopefully, we can work together on it.

Thank you very much.

Senator TOWER. Thank you, Mr. Chairman.

[Whereupon, the hearing was concluded at 10:54 a.m.]

NATIONAL SECURITY AND INTERNATIONAL AFFAIRS

THURSDAY, MARCH 22, 1984

U.S. SENATE,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The committee met, pursuant to notice, at 10:05 a.m., in room SD-608, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman of the committee) presiding.

Present: Senators Domenici, Grassley, Chiles, Biden, and Sasser.

Staff present: Stephen Bell, staff director; Charles Flickner, senior analyst for international security and international affairs; and Paul Heilig, analyst for national security.

For the minority: Richard N. Brandon, staff director; and Doug Cook, senior analyst for defense.

Chairman DOMENICI. We could start with the testimony, but it is more important that some of the Senators who want to ask questions have an opportunity to be here. So, I am going to call the hearing off until 11 o'clock and hope that Senator Grassley and a couple of others who are interested in hearing this testimony will be back. If they are not, we will start at 11 o'clock and do as much as we can.

We are in recess.

[Recess.]

OPENING STATEMENT OF CHAIRMAN DOMENICI

Chairman DOMENICI. All right. We are going to get started. This is very interesting. Some are wondering where all the people are. Last year, we had to ration seats when you testified, Mr. Spinney.

Today we are going to hear from you for the second time. Mr. Frank Spinney, staff analyst, Office of the Secretary of Defense. We welcome you.

CURRENT SYSTEM PRODUCES INSTABILITY IN DEFENSE PROGRAM

I will make just two observations before you begin. First, Senator Tower testified before this committee on March 6, 1984, and in a very strange way, he addressed many of the issues we are going to hear about today. He explained how the current system produces instability in our defense program, how that instability frustrates our efforts to manage the Department of Defense. He talked about the need for Congress to demonstrate commitment and stability for our defense program—a recommendation I am sure Mr. Spinney will support.

Once again, I recommend that every Senator should read the recommendations that Senator Tower made in the hearing of March 6.

PROVIDE STABILITY AND ADEQUATE FUNDING LEVEL

My second observation is that people who have been calling for Mr. Spinney's testimony and working actively to publicize his message seem to either not be listening to his conclusions or coming up with at least their own interpretations of his conclusions. I am referring to the fact that budget reductions, especially extremely large ones, that affect the procurement schedule for weapon systems can only serve to aggravate the problems that Mr. Spinney is going to describe for us today. If we are going to make progress on these problems, we must provide stability and an adequate funding level. Large reductions, 10 to 15 percent; delaying or eliminating of some or all of the weapon systems that are at various stages of development, only serve to throw our defense program into disarray. It would seem to me that anything as large as a \$130 billion budget reduction over 3 years, with a corresponding \$100 billion outlay reduction clearly is calculated to do precisely what I have just described.

There are other contributing factors to this problem, as well. I hope that the discussion today will highlight as many of these problems as possible, and I hope it will point us toward some solutions.

Mr. Spinney, how long will it take you to present your testimony?

Mr. SPINNEY. Depending on the questions, Senator, probably 1 hour and 15 minutes.

Chairman DOMENICI. Senator Grassley, we put this off because you had another markup. Are you finished?

Senator GRASSLEY. I am not finished, but I think I am going to stay anyway. This is so important to what we are about to do here in the next 2 months in this committee and on the floor of the Senate.

Would it be possible for me to make an opening statement?

Chairman DOMENICI. Yes. Go ahead.

OPENING STATEMENT OF SENATOR GRASSLEY

Senator GRASSLEY. I want to, of course, thank Mr. Spinney for the time and effort he has put into his analysis of the very broad and complex structural problems in the Pentagon's planning, and particularly his update for our immediate needs. We know that 2 years ago, in the midst of the recession, there was a point where I had proposed an across-the-board budget freeze of all spending, including defense, in order to get deficits under control. Of course, the loudest arguments I heard against a freeze, both from within and without Congress, was related to the defense budget. At that point, I set out to do an investigation to justify a defense freeze. And of course, that led me to you, Mr. Spinney, and your analysis of Pentagon planning and competence.

Mr. Spinney's work, of course, has been a valuable service to us in the Congress, relating to us both the structural problems in DOD and their adverse consequences on our national defense.

GAO REVEALS SERIOUS PLANNING DISORDER IN DOD

Today, Mr. Spinney has been invited back to tell this committee whether or not there has been an improvement since his testimony here 1 year and 2 weeks ago. I do not think anybody in this room is naive enough to think that significant changes have been made to improve the problems that he described. Just last week the General Accounting Office, responding to a request made by myself and nine other Senators, issued a report which in essence completely verified Mr. Spinney's testimony before this committee last year. The General Accounting Office report revealed a serious planning disorder in DOD, which has systematically increased costs and reduced planned quantities simultaneously over many years.

The truth of the matter is that we are staring at a bad structural nightmare that will not go away and has not gone away; as long as we continue to feed it, it is going to stay here. I, for one, plan not to feed it. There are times when the best remedy to a problem is to simply say "No" and that time is now.

ACROSS-THE-BOARD FREEZE PROPOSED

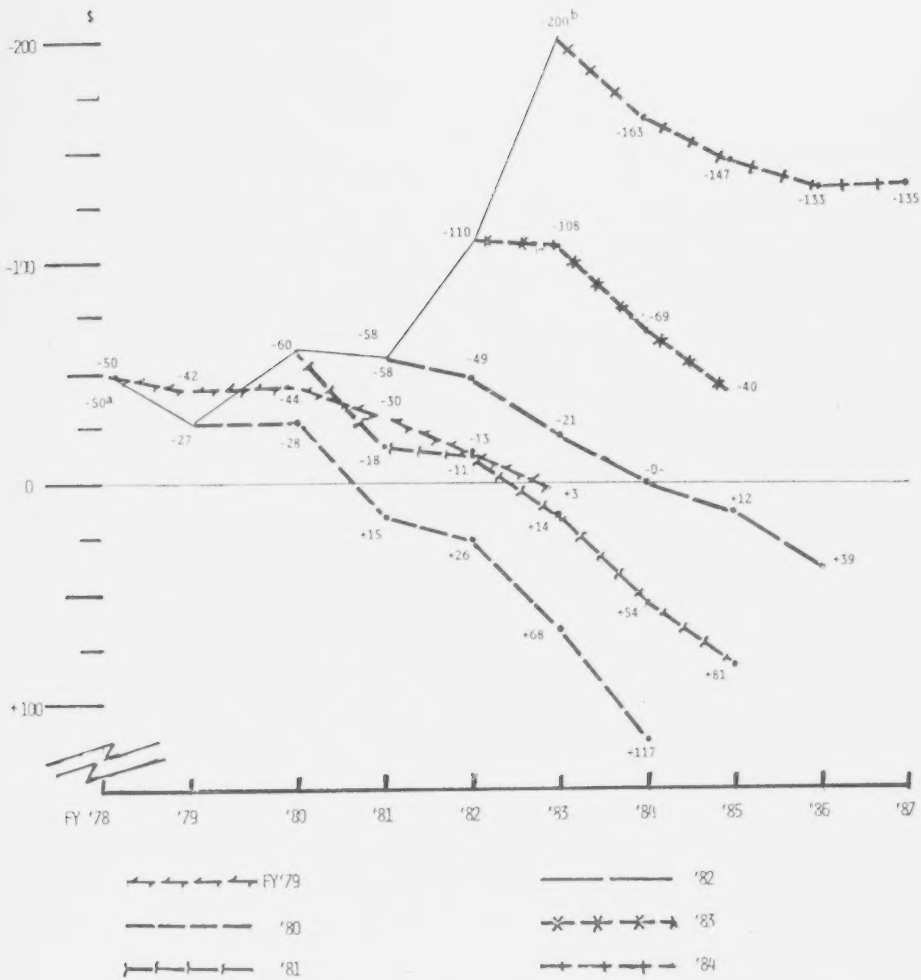
Again, this year, I am proposing an across-the-board freeze, and of course, that includes defense, as well, and I hope that we have bipartisan support on this committee. I feel we do at this point, at least more so than last year. There is a growing awareness of these same structural problems throughout Government, however, and feeding them further can only make things worse. It is time that we put this beast of Government spending to sleep and do that by freezing funds, so that we can then diagnose the disorders and perform the necessary structural surgery to maximize the quantity and quality of output for the Federal dollar.

PLANS/REALITY MISMATCH

Mr. Spinney, since your visit last year, I have tried to do the same thing you did on the defense budget for all of the Federal Government. I adopted your plans/reality mismatch concept that you did for the Defense Department, and applied it to the whole Federal budget. This chart is a snapshot of the fine work that we have done in Congress. It proves that we are addicted to what I call the narcotic of optimism. The lines sloping downward are long-range deficit projections we make every year after we pass a budget resolution, and the solid line heading north, of course, is reality. You can see that just as your charts on 60 different weapons systems showed a mismatch, there is a mismatch shown here.

DEFICIT

(billions of dollars)



SOURCE: SENATE REPORTS ON THE FIRST AND SECOND CONCURRENT BUDGET RESOLUTIONS OF THE SENATE BUDGET COMMITTEE FOR FY'S 1978-83.

^aACTUAL DEFICIT AS REPORTED IN THE ECONOMIC REPORT OF THE PRESIDENT, FEB. 1983.

^bESTIMATED

compiled by: Senator Charles Grassley

Senator BIDEN. Senator, maybe your staff could turn that around so he could see it.

Senator GRASSLEY. Oh, I am sorry.

Senator BIDEN. No—I would like the witness to see it—we agree. [Laughter.]

Senator GRASSLEY. I only have 1 more minute, Mr. Chairman.

Senator BIDEN. Go ahead, Chuck, you are doing fine.

STRUCTURAL PHENOMENON INSTITUTIONAL THROUGHOUT GOVERNMENT

Senator GRASSLEY. I raise this to illustrate a point. The structural phenomenon that you, Mr. Spinney, talk about is not unique to DOD. It is very institutional, throughout Government. It is an attempt to avoid making tough decisions. I think you talked about that as it relates to the bureaucracy of the Pentagon, that it is very difficult for them to make the tough decisions of picking and choosing.

It is an inability to either understand or want to understand the long-term consequences of current decisions. The consequences of not learning will continue to build momentum toward an inevitable crisis, unless we get a grip on the causes and make corrections. I hope we are not too late to do that.

I am not a lawyer, but if I were a prosecuting attorney presenting final arguments before a jury of the American people, detailing charges against our Federal spending and procurement policies, I have no doubt that I could win a conviction. The first Spinney study, entitled "Defense Facts of Life," the Spinney briefing before our committee last year, the GAO briefing, the Heritage study by George Khun, and the Air Force A3 study—they all tend to say the same thing. The evidence is overwhelming, and I think the American people, responding to a plea from a prosecuting attorney, reminded of all these facts in closing arguments, would simply say: "Guilty, guilty, guilty," to the Congress.

CRASH COURSE IN DISCIPLINE NEEDED

Mr. Chairman, in closing, I hope this committee pays close attention to what Mr. Spinney says here today. I hope we can think of the problems he is describing and apply them to the rest of the Federal budget, to both the executive branch and the Congress. We are fast approaching a fiscal crisis, and, to avoid it, we need a crash course in the art of discipline. The clock is running, with less than 12 months to accomplish some dramatic changes in the way we have approached this problem over the last 3 years since I have been in the Senate.

Thank you.

Chairman DOMENICI. Senator Biden?

OPENING STATEMENT OF SENATOR BIDEN

Senator BIDEN. Thank you, Mr. Chairman. I have just a brief opening statement.

It will come as some surprise to many, although not to the members of the committee because they already know it, that I agree with Senator Grassley.

Senator GRASSLEY. Well, we did at least once before.

Senator BIDEN. That is true, and that hurts us both most of the time.

But all kidding aside, Senators Kassebaum, Grassley, and myself have, like all of us are doing, come up with our own proposal. I want to make a slight distinction. Senator Grassley and I arrived at exactly the same spot, but for slightly different reasons. I am not concerned about declaring guilt; I am looking for a reprieve, not just for the Congress, but the President and the American people. And I want to make it clear at the outset of this hearing, as it relates to defense, that our freeze proposal, I view as its single greatest asset that it allows some breathing room. Senator Grassley and I will probably, assuming our freeze were to pass, disagree on where we should go from here. But at least we are in the position to give the President-elect, the President we have now, or a Democratic President, an opportunity to have the option to deal with something other than a deficit that continues to grow, a state of recession, with inflation up, and everything else. I mean, if we cannot deal with it now, we cannot deal with it later. And that is in no way to denigrate the proposal made by the chairman, which I think is a very positive step, or the proposal made by the ranking member, or the proposal made by Senator Hollings, all three different proposals. But I would argue the main benefit to this proposal that we are talking about is that it is a single year to give time to breathe, and what I am going to be asking a lot of questions about, Mr. Spinney, is what impact will such a freeze in fact have upon the operations of our defense establishment, and when we get to that, I will be asking questions about that.

Thank you very much. Thank you, Mr. Chairman.

Chairman DOMENICI. Senator Chiles?

Senator GRASSLEY. Let me thank Chairman Domenici for rescheduling this today, but also for scheduling it in the first instance. I forgot to do that. You have been so cooperative over the last 2 years in my effort to get information, and without your help, I would not have been able to do it. I want to publicly acknowledge that.

Chairman DOMENICI. Senator, I appreciate that.

I think Senator Chiles wants to make some brief remarks, but we are so late, I hope he will be brief and we can get on and let the gentleman start or I am afraid we will not get much on the record.

OPENING STATEMENT OF SENATOR CHILES

Senator CHILES. Mr. Chairman, I am going to abbreviate my remarks, and ask you to put my statement in full in the record.

I want to thank Mr. Spinney for being here. We on the committee have certainly come to admire and respect the work that you have done to try to put the problems of the defense budget in perspective.

MAKE SOME HARD CHOICES NOW

In addition to the voice that you have raised about funding, the General Accounting Office has told us in their recent report, which has, I think, used and confirmed your analysis, that if history is an accurate predictor, we will add between \$173 and \$324 million to

the defense budget over the next 5 years. If this is the case, it seems to me that what you and GAO are telling us is that we have to make some hard choices now. If we continue along our present path, we will be buying fewer but more expensive weapon systems, contributing more and more to the rising budget deficits. We must address those structural problems and improve our way of doing business.

We have to insure that our initial cost estimates are reasonable and accurate. If we do not, the cost of procuring the systems will become uncontrollable. The CBO estimated that prior year outlays made up 30 percent of the defense budget in fiscal year 1980. By 1987, the prior year funding, which is paying for an increasingly expensive defense buildup, is going to demand 40 percent of DOD's available money. Clearly, we are going to lose the ability to make reasonable adjustments in the Defense Department's budget if we do not try to address the problem of the procurement funding wedge now.

FAILURE TO CONTROL PROCUREMENT OF NEW WEAPONS SYSTEMS

The President's own former Chairman of the Council of Economic Advisers, Mr. Murray Weidenbaum, made a compelling case on the problems of DOD procurement funding, in the March 19 issue of the New York Times. I ask that the full text be included in the record,¹ but I will quote from one section:

It is disheartening to note the continued failure to tackle the most important question controlling the procurement of new weapons systems. That is the most rapidly growing category in the military budget. Current schedules imply production rates higher than those at the peak of the Vietnam War. The compromise relies instead on reducing readiness and shaving military pay increases, and those are of short-term expedience. Once again, it calls for making some hard choices in the defense budget, and those choices have to be made on the basis of reasonable and affordable strategies.

I sense that the once strong consensus on rebuilding our Nation's defense that existed at the beginning of this administration is eroding. If we are to rebuild it and strive toward a consistent level of funding for the Department of Defense, I think we have to address the problems you have highlighted. We have to demonstrate to the American people that we are indeed capable of making those hard, but necessary, choices.

Thank you.

Chairman DOMENICI. Thank you very much.

[The prepared statement of Senator Chiles follows:]

¹ See p. 608.

Senator Lawton Chiles

Florida

Senate Budget Committee, Room 634, Dirksen, Washington D.C. 20510

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Contact: Dennis Beal

RELEASE ON DELIVERY
March 22, 1984

REMARKS OF
SENATOR LAWTON CHILES
AT A
SENATE BUDGET COMMITTEE HEARING
ON DEFENSE
MARCH 22, 1984

THANK YOU FOR COMING TODAY, MR. SPINNEY. WE ON THIS COMMITTEE HAVE COME TO ADMIRE AND RESPECT THE WORK YOU HAVE DONE TO HELP US PUT THE PROBLEMS OF THE DEFENSE BUDGET IN PERSPECTIVE. I BELIEVE YOU RECOGNIZE AS WE DO THE NEED TO RESPOND TO THE GROWING BUILD-UP IN SOVIET MILITARY POWER.

THE PROBLEM WE MUST CONTINUALLY ASSESS IS HOW DO WE RESPOND TO THIS THREAT? I BELIEVE WE MUST FIRST DEVELOP A STRATEGY BASED UPON A REALISTIC ASSESSMENT OF THE THREAT WE FACE. THEN WE MUST DEVELOP PLANS TO EXECUTE THIS STRATEGY.

FINALLY, AND MOST IMPORTANTLY, OUR BUDGET SHOULD REFLECT THESE REALISTIC AND AFFORDABLE PLANS.

IT SEEMS WE HAVE LOST SIGHT OF THIS SIMPLE LOGIC. OUR PLANS APPEAR TO REFLECT AN UNCLEAR OFFENSIVE STRATEGY INSTEAD OF DEVELOPING A REALISTIC STRATEGY OF DETERRENCE. RECENT EVENTS IN LEBANON HAVE INDICATED TO US AGAIN THAT THIS ADMINISTRATION HAS SOME DIFFICULTY DISTINGUISHING BETWEEN VITAL INTERESTS WHICH MAY DEMAND A MILITARY RESPONSE AND IMPORTANT INTERESTS WHICH REQUIRE A MORE JUDICIOUS, LONG-RANGE DIPLOMATIC APPROACH.

THESE PROBLEMS OF AN UNREALISTIC STRATEGY BECOME MORE SHARPLY FOCUSED WHEN WE REVIEW THE ADMINISTRATION'S DEFENSE BUDGET REQUEST. WE ALL RECOGNIZE THE NEED FOR STEADY AND REALIZABLE GROWTH IN THE DEFENSE BUDGET. UNFORTUNATELY, THE HISTORY YOU HAVE PRESENTED TELLS US THAT WITHOUT A STRONG NATIONAL CONSENSUS ON THE NEED FOR THIS STEADY CONSISTENCY WE GO THROUGH PERIODS OF RAPID BUILD-UP FOLLOWED BY PERIODS OF PROLONGED DECLINE. OUR PLANS WHICH WERE BASED ON THE MOST OPTIMISTIC OF ASSUMPTIONS AT THE OUTSET ARE THEN CALLED INTO QUESTION AND THE COSTS OF THOSE PLANS DRAMATICALLY INCREASE. WHEN WE ARE FACED WITH THESE BUDGET REALITIES, WE ARE THEN FORCED TO DECIDE BETWEEN CUTTING PROGRAMS OR STRETCHING THEM INTO THE OUTYEARS. TOO OFTEN WE CHOOSE THE LATTER AND WE FIND MORE AND MORE DOLLARS CHASING FEWER AND FEWER WEAPONS SYSTEMS.

SOME IN THE ADMINISTRATION, AND SOME IN THIS CONGRESS, HAVE ASSERTED THAT YOUR MESSAGE IS THAT WE MUST PUT MORE MONEY IN THE DEFENSE BUDGET TO HEDGE AGAINST THESE BUDGET REALITIES. I DO NOT AGREE WITH THIS ASSERTION. SURELY, FEW OF US BELIEVE THAT FACED WITH \$200 BILLION DEFICITS, LEGITIMATE DOMESTIC SPENDING REQUIREMENTS AND A LIMIT TO HOW MUCH TAXES WE CAN RAISE, WE CAN AFFORD TO PUT STILL MORE FUNDING INTO THE DEFENSE BUDGET. THE GENERAL ACCOUNTING OFFICE HAS TOLD US IN THEIR RECENT REPORT, WHICH USED AND CONFIRMED YOUR ANALYSIS, THAT IF HISTORY IS AN ACCURATE PREDICTOR WE WILL ADD BETWEEN \$173-324 BILLION TO THE DEFENSE BUDGET OVER THE NEXT FIVE YEARS. IF THIS IS THE CASE, THEN IT SEEMS TO ME THAT WHAT YOU AND THE GAO ARE TELLING US IS THAT WE MUST MAKE SOME HARD CHOICES NOW.

IF WE CONTINUE ALONG OUR CURRENT PATH WE WILL BE BUYING FEWER AND MORE EXPENSIVE WEAPONS SYSTEMS, WHILE CONTRIBUTING EVEN MORE TO THE RISING BUDGET DEFICITS. WE MUST ADDRESS THESE STRUCTURAL PROBLEMS AND IMPROVE OUR WAY OF DOING BUSINESS. WE MUST ENSURE THAT OUR INITIAL COST ESTIMATES ARE REASONABLE AND ACCURATE. IF WE DO NOT, THE COSTS OF PROCURING THESE SYSTEMS WILL BECOME UNCONTROLLABLE.

THE CBO ESTIMATES THAT PRIOR YEAR OUTLAYS MADE UP 30% OF THE DEFENSE BUDGET IN FY 1980. BY FY 1987 THIS PRIOR YEAR FUNDING -- WHICH IS PAYING FOR AN INCREASINGLY EXPENSIVE DEFENSE BUILD-UP -- WILL DEMAND 40% OF DOD'S AVAILABLE MONEYS. CLEARLY, WE ARE GOING TO LOSE THE ABILITY TO MAKE REASONABLE ADJUSTMENTS IN THE DEFENSE BUDGET IF WE DON'T ACT NOW AND ADDRESS THE PROBLEM OF THIS PROCUREMENT

FUNDING "WEDGE." THE PRESIDENT'S OWN FORMER CHAIRMAN OF THE COUNCIL OF ECONOMIC ADVISORS, MR. MURRAY WEIDENBAUM, MADE A COMPELLING CASE CONCERNING THE PROBLEMS OF DOD PROCUREMENT FUNDING IN THE 19TH MARCH ISSUE OF THE NEW YORK TIMES (THE FULL TEXT OF WHICH I WOULD LIKE INCLUDED IN THE RECORD.) I WILL QUOTE FROM ONE SECTION "...IT IS DISHEARTENING TO NOTE THE CONTINUING FAILURE TO TACKLE THE MOST IMPORTANT QUESTION: CONTROLLING THE PROCUREMENT OF NEW WEAPON SYSTEMS. THIS IS THE MOST RAPIDLY GROWING CATEGORY IN THE MILITARY BUDGET; CURRENT SCHEDULES IMPLY PRODUCTION RATES HIGHER THAN THOSE AT THE PEAK OF THE VIETNAM WAR. THE COMPROMISE RELIES INSTEAD ON REDUCING READINESS AND SHAVING MILITARY PAY INCREASES. THESE ARE SHORT-TERM EXPEDIENTS."

ONCE AGAIN, THIS CALLS FOR MAKING SOME HARD CHOICES IN THE DEFENSE BUDGET. THESE CHOICES MUST BE MADE ON THE BASIS OF A REASONABLE AND AFFORDABLE STRATEGY. I SENSE THAT THE ONCE STRONG CONSENSUS ON REBUILDING OUR NATION'S DEFENSES THAT EXISTED AT THE BEGINNING OF THIS ADMINISTRATION IS ERODING. IF WE ARE TO REBUILD IT AND STRIVE TOWARD A CONSISTENT LEVEL OF FUNDING FOR THE DEPARTMENT OF DEFENSE, I BELIEVE WE MUST ADDRESS THE PROBLEMS YOU HAVE REVEALED TO US AND DEMONSTRATE TO THE AMERICAN PEOPLE THAT WE ARE INDEED CAPABLE OF MAKING THOSE HARD BUT NECESSARY CHOICES.

[From the New York Times, Mar. 19, 1984]

FULLY TACKLE THE DEFICITS

(By Murray L. Weidenbaum)

ST. LOUIS—The "first installment" of deficit reductions agreed upon by the White House and Republican Congressional leadership is a useful first step. It is also a quick fix and a poor precedent for further rounds of fiscal restraint.

The reliance on patchwork changes in the tax structure (which constitutes one-third of the package) is hardly an approach that merits further use. Take the decision to tighten up on income averaging, which was originally designed to help people with fluctuating incomes who were paying disproportionately higher taxes. Income averaging was a good idea and still is. Making it less effective raises revenue but does nothing to advance the idea of tax reform.

In military spending (another third of the package) it is disheartening to note the continuing failure to tackle the most important question; controlling the procurement of new weapon systems. This is the most rapidly growing category in the military budget; current schedules imply production rates higher than those at the peak of the Vietnam War. The compromise relies instead on reducing readiness and shaving military pay increases. These are short-term expedients; worse, attempts to trim pay increases could make it more difficult to attract good people to the volunteer force.

In civilian spending, the proposed adjustments of cost-of-living increases and caps on Government employee pay raises can be justified in the short run. But they, too, are one-shot measures.

Alarms about uncontrolled deficit spending have become familiar. Deficits keep interest rates high. Deficits are potentially inflationary. Deficits compete with investment. Deficits reduce our industrial competitiveness by making the dollar more expensive to foreign customers. The White House knows this and so does Congress. But the longer they wait, the worse the problem will get. Payments on the debt continue to rise. Federal projects, civilian and military, move inexorably forward. Even the most marginal program is difficult to stop.

The Budget and Accounting Act of 1921 gives the President responsibility for preparing the budget. But one ingredient was uniquely missing from Mr. Reagan's January budget proposals to reduce the deficits to the levels he deems appropriate. This glaring omission effectively gave the leadership role to Congress, which is ill-equipped to handle it.

The continuing budget impasse can be broken only if the President takes charge by amending the budget in a major way to make up for his original omission. He should now prepare a further package of specific deficit-reducing actions. A reasonable target would be a \$50 billion cut in fiscal 1985, a \$100 billion cut in 1986 and a \$150 billion cut in 1987. The onus would then be on Congress to enact the plan or develop its own.

Unfortunately, when serious budget-cutting gets down to specifics, the discussion rapidly degenerates. Defense procurement is too important, entitlements too difficult to control beyond tinkering with cost-of-living adjustments, and the remaining items too small to fuss with. Thus, large tax increases bubbles up in Congress as the reluctant response. In the absence of major spending cuts, further tax increases are likely to seem even more attractive the next time around.

This would be the wrong way to go. The 1981 tax cuts were a historic accomplishment. It would be unfortunate if they were reversed. What we must do is "earn" the tax cuts by agreeing to meaningful spending cuts. This means that the President and Congress must finally, courageously face up to the fundamental overrun that has occurred in the military budget in the past three years. From the target of 5 percent annual growth in real military spending that candidate Reagan presented in 1980, the Pentagon budget has crept upward to 10 percent or more. Surely our military posture has not deteriorated in the last three years. What's more, we do not promote national security by showing Moscow how fast we can spend money.

There is a cogent, practical reason for stressing military spending restraints. Except for the quick fix incorporated in last week's proposed first installment, virtually every package of substantial budget cuts presented to the President has been rejected because they attempted to reduce the growth of military procurement. That makes it difficult to win support for large reduction in civilian programs, and the fundamental budget impasse continues.

Slowing down the hectic expansion of military procurement can be only one part of an adequate deficit-reduction program. Budget restraint must extend to entitlements, farm subsidies, aid to business, the Corps of Engineers and other areas. The

goals of fairness and deficit reduction will be served by extending budget-cutting to the point where it achieves the old budget maxim, "good budgeting is the uniform distribution of dissatisfaction."

Serious budget cutting still lies ahead. But it will require sustained Presidential leadership.

Chairman DOMENICI. Mr. Spinney, you may proceed.

**STATEMENT OF FRANKLIN C. SPINNEY, STAFF ANALYST, OFFICE
OF THE SECRETARY OF DEFENSE**

Mr. SPINNEY. Thank you, sir.

The title of my briefing is "Defense Program Analysis and Evaluation: Is History Repeating Itself?" (See chart 1, p. 637.)

I designed this analysis and picked the title carefully. As you may recall, when I came and made my presentation, to you last year, the counter-argument was that times have changed. That is, the analysis was accurate history, but it does not reflect the current reality.

Well, I disagree with that argument, and I am going to try to describe the continuing pressures that are building up to make history repeat itself. I am going to specifically rebut the historical argument.

This briefing presents my personal views. It does not represent an official DOD or PA&E position, and it should not be construed to do so. (See chart 2, p. 638.)

To establish a point of departure, I will summarize the conclusions of two analyses. (See chart 3, p. 639.) The first is defense facts of life, which Senator Grassley alluded to earlier. This was a 3-year effort that culminated in a report published in December of 1980; the second is plans/reality mismatch, which I summarized before this committee last year. Both of these analyses led to the conclusion that the Department of Defense faces serious structural problems affecting the way we are making our defense decisions.

I want to stress at the outset that these problems are caused in part by our institutional structure. Congress contributes to these problems; the executive department contributes to these problems. In many ways, the Congress and the executive department feed and reinforce each other. So, even though we will be focusing on the Defense Department, I do not want to convey the impression that this is an internal problem.

5-YEAR BUDGET PLANS EXHIBIT STRUCTURAL DISHARMONIES

Defense facts of life and the plans/reality mismatch identified four structural disharmonies in our planning process. If you examine our 5-year plans year after year after year—and I want to stress this fact—it does not seem to matter what administration is in power or what policies in effect—the pattern of disharmonies remains much the same. In fact, I have been amazed at the stability of this pattern over time. I have examined that budget data going back 30 years and the pattern is pretty much the same—it differs in specifics like out-year budget projections—but the interrelationships among these structural disharmonies remain the same.

First, our plans project future budgets that are larger than Congress is likely to appropriate.

Next, we tend to underestimate out-year operating costs. Now, some of these costs are similar to fixed costs—they are not purely fixed, but they are very difficult to deal with. When we underestimate future operating costs, we generate the conditions for cost growth in the operating budget. Moreover, since our overall budget projections are optimistic, we tend to get squeezed by the actual appropriations. So you have cost growth on the inside, while the overall budget turns out to be less than expected.

The reason we tend to underestimate the out-year operating budgets is so we can allocate the bulk of out-year budget growth into the procurement budget. And then, we tend to——

Senator BIDEN. "So" we can do it, or "because" we can do it?

Mr. SPINNEY. I used a bad word there. That is a good question.

My own belief is that although it may not be a deliberate policy that is instituted from some higher authority, the bureaucracy naturally works to pump up the procurement budget. The only way we can do that is to hold down future growth of the operating budget. Individual program advocates are competing for budget allocations. I am going to show you some data from historical 5-year plans that will bring this point out rather dramatically, I think.

Within the procurement budget, we tend to project future unit cost declines. In the past these declining cost projections have proven unrealistic. So the overall budget turns out to be less than projected and the operating budget is under pressure to grow faster than projected. The net effect is to squeeze the procurement budget. Meanwhile, disharmony No. 4 sets up the conditions for cost growth within the procurement budget. This situation can be thought of as a pressurecooker—and it is independent of the budget level projections. If we increase the projections, it happens, and if we decrease the projections, it happens.

INDIVIDUAL PROCUREMENT DECISIONS MAGNIFY BUDGET DISHARMONIES

Finally, there are two types of individual program decisions that in effect magnify these budget disharmonies. When we are under budgetary pressure, we do not bite the bullet and cancel programs to relieve the pressure. Rather, we tend to stretch production rates, and of course, this increases unit costs even further. When we increase our outyear planning projections for overall budget growth—like we did in the fiscal year 1983-87 budget compared to the fiscal year 1982-86 budget—we tend to start up new programs instead of solving some of the problems created by these budget disharmonies.

You can think of these individual program decisions as being analogous to turning up the burner under the pressurecooker.

Senator BIDEN. Can you give us an example?

Mr. SPINNEY. Well, I am going to in the briefing. It will be at the very end. I am going to address each one of these questions in the briefing.

Senator BIDEN. OK.

STRUCTURAL DISHARMONIES CAUSE UNFOLDING MISMATCH BETWEEN PLANS AND REALITY

Mr. SPINNEY. My basic conclusion was that these structural disharmonies cause an unfolding mismatch between plans and reality, not unlike the chart displayed by Senator Grassley.

The implication of that conclusion is that if we increase the budget without resolving those structural disharmonies, we are going to make matters worse.

So it turns out, I think I agree with both Senator Domenici and Senator Grassley. If you decrease the budget, you are going to cause problems; and if you increase the budget, you are going to cause problems. We are dealing with a structural issue, and to solve the planning problems that I am going to describe, we have to change the way we do business. This issue is independent of the overall budget level.

DO CURRENT PLANS CONTINUE TO EXHIBIT DISHARMONIES?

Well, of course, the crucial question is: Do our current plans continue to exhibit those disharmonies. (See chart 4, p. 640.) This is the question we are going to try to answer in this briefing.

We are going to attempt to answer this question by analyzing the current 5-year plan—that is the fiscal year 1985–89 5-year defense plan. (See chart 5, p. 641.) I am going to use the term “FYDP” when referring to the 5-year defense plan.

In addition to analyzing the fiscal year 1985–89 plan in isolation, we are going to compare the current 5-year defense plan to last year's 5-year defense plan, and we are going to examine how those plans changed.

The briefing is organized to answer these six questions, which are mirror images of the structural disharmonies I just described. We are going to assess whether or not our budget growth assumptions are realistic; if there is any reason to suspect whether or not future operating budgets are being underestimated; we are going to determine if the bulk of future budget growth is still being allocated to procurement; we are going to assess whether or not the procurement plans are based on optimistic pricing assumptions; we are going to examine whether or not we have canceled any programs to relieve budgetary pressures; and finally, we are going to see if we added any new programs when planned budget growth was increased.

REALISTIC OR OPTIMISTIC FUTURE GROWTH ASSUMPTIONS

Let's start with question No. 1: Do our budget plans contain realistic future growth assumptions? Or, is there reason to suspect that those assumptions are optimistic? (See chart 6, p. 642.)

HISTORICAL TRACK OF DOD APPROPRIATIONS

This slide displays the historical track of DOD appropriations—in constant dollars and in current dollars. The solid lines display the historical data and the dotted lines depict the projections contained in the fiscal year 1985–89 FYDP. (See chart 7, p. 643.)

Now, there are a few points revealed by the data plotted on this slide. First the fiscal year 1984 appropriation is the latest in a string of 6 years of real budget growth, averaging annually about 6.6 percent per year. Now, this is the longest and strongest period of real growth since the end of World War II.

Senator BIDEN. In what year was that?

Mr. SPINNEY. Six years ago, so that would be 1978-79.

The second point I want to make here is that the current level of appropriations is very high. The fiscal year budget is a very high budget. It is the highest peacetime budget in our Nation's history. It is actually higher in constant dollars than the peak Vietnam appropriation of 1968.

We plan to increase that budget for 5 more years. That amounts to 11 years of sustained real growth if we implement our 5-year plan. Now, prior to this period, the longest period in the post-World War II era, during which we sustained real growth was 3 years. We are asking for a lot of money—that is my only point. We may get it, but we may not.

PLANS AND REALITY

Let's turn to the question of whether or not we are appropriating the money that we request. (See chart 8, p. 644.) We are going to address this issue in current dollars, because current dollars reflect DOD's demand function from the viewpoint of Congress. We ask for a current dollar appropriation rather than a constant dollar appropriation, so current dollars are more reflective of our demand function. In any event, the pattern is the same in constant dollars.

The line with the circles is the line of actual appropriations, starting with 1981. The heavy solid line is the fiscal year 1983-87 5-year defense plan, and it starts from the actual 1982 appropriation. The thin solid line is the fiscal year 1984-88 5-year defense plan, and the black dotted line is the fiscal year 1985-89 5-year defense plan. Note how actual appropriations depart from the line of planned appropriations. Our actual budgets are smaller than our planned budgets. You can see that this pattern of departure appears to be getting worse. To get back on track with the current budget, we need 13 percent real growth in fiscal year 1985, roughly 9 percent in fiscal year 1986, and then real growth is projected to taper off to slightly less than 5 percent in the outyears. The fiscal year 1985 request amounts to an 18-percent increase in current dollars. This is a large increase. Probably a better way of appreciating the growth pressure needed to implement fiscal year 1985-89 plan would be to determine the equivalent smooth growth that this plan requires over the next 5 years.

Senator BIDEN. Let me ask you in simple English. In order to sustain the 5-year plan, we will have to, this year, have an increase in current dollars of 18 percent; is that what you are saying?

Mr. SPINNEY. Yes, that is between 1984 and 1985.

Senator BIDEN. OK.

ALTERNATIVE GROWTH SCENARIOS VERSUS FISCAL YEAR 1985-89 5-YEAR
DEFENSE PLAN

Mr. SPINNEY. This briefing is really more of a structured discussion so if there are any questions, please feel free to ask them.

To get a better feel for the kind of pressure that we are under, let's see the kind of smooth growth that we need to implement this 5-year plan.

This chart shows the current 5-year defense plan—oh, before we get into that, I would like to make one more point on the last slide.

I do not want to convey the impression that this is a new situation. You can compare plans to reality for our plans in the 1970's and 1960's and see the same pattern. I have done it. This pattern is business as usual. So there is nothing unusual depicted on this slide.

This slide depicts the line of actual appropriations and the current 5-year defense plan. (See chart 9, p. 645.) The curved lines emanating from the fiscal year 1984 appropriation are hypothetical smooth growth scenarios. They are depicted in current dollars, but their underlying constant dollar real growth rate is listed on the right. In other words, the top curve, represents 8 percent real growth, but it is converted, using DOD deflators, to current dollars, so we can compare it to the fiscal year 1985-89 FYDP. We need 8 percent real growth to break even over the long term.

CUMULATIVE 5-YEAR SHORTFALL

This table on the right shows the cumulative 5-year budget shortfall that would occur under each hypothetical growth scenario. For example, if the budget grows at 5 percent a year for the next 5 years, we are going to have to reduce the budget plan by \$148 billion—constant fiscal year 1985 dollars.

Senator BIDEN. In order to meet the 5 percent.

Mr. SPINNEY. In order to meet the 5-percent top line. If your growth is at 3 percent, we must reduce the plan by \$239 billion; if the growth is 1 percent per year, we must reduce the plan by \$324 billion.

Under each one of these scenarios, we still have a string of 11 years' real growth, which, to the best of my knowledge, is historically unprecedented.

Moreover, the 8-percent break-even point is also optimistic, because it assumes we can transfer near term budget cuts into the far term at no cost.

Senator BIDEN. Does that ever happen?

Mr. SPINNEY. Oh, the transfer happens all the time. That is what we are doing right now. In fact, I am going to show you how we are doing that.

Senator BIDEN. No; I meant the other end.

Mr. SPINNEY. Oh. If you went back and examined the 5-year plan that ended in 1968, and since we were fighting a war, that was not planned you would see this kind of out-year increase. Yes, it happens occasionally. It is not the usual thing.

The reason the 8 percent is optimistic is that it assumes that we can transfer the losses taken in the near term into the far term at no cost. In other words, it does not cost anything to stretch pro-

grams—or slow production rates. Obviously, these actions do increase costs. So to really break even, we will need more than 8 percent annual real growth in the budget.

Well, think about it. We have increased the budget in constant dollars for 6 years at an average of 6.6 percent per year. To implement the fiscal year 1985–89 plan, we have to accelerate the budget growth to 8 percent per year over the next 5 years.

PLANS BASED UPON OPTIMISTIC GROWTH PROJECTIONS

So I think we are now in a position to answer issue 1: Are projections of future budget growth assumptions optimistic? This slide summarizes the key points of our discussion. (See chart 10, p. 646.)

For the past 6 years, the DOD budget grew at an average annual real growth rate, of 6.6 percent. We are projecting 5 more years of large budget increases. Appropriated budgets have been less than planned budgets, and this mismatch seems to be deteriorating. To implement the current 5-year plan, we have to accelerate the average annual growth rate to 8 percent a year. Continuation of the present trend of 6.6 percent would result in a 5-year budget shortfall of \$69 billion; if real growth is reduced to 5 percent a year, the shortfall would increase to \$148 billion.

These shortfalls still assume we have 11 years of real budget growth. We are talking about strong budget growth, even at 5 percent. So I think the implication is clear. Our plans are based upon optimistic growth projections. We might get that 8-percent annual increase for the next 5 years, but we might not. Now, you might make the argument that, on optimistic projection is a good bargaining strategy, a good negotiating strategy. But if you are going to make this argument, then you should design the budget in a way that enables you to adjust to the unfolding mismatch without tearing the budget to pieces.

Senator BIDEN. By adjust, you mean drop something out of the 5-year plan?

Mr. SPINNEY. Yes, sir, it can be thought of as a hedging strategy.

Now, in the remainder of the briefing, I am going to show you that we do just the opposite. We increase the rigidity in our budget and this makes the adjustment more wrenching. This is the basic reason why increasing the budget can cause problems, and why decreasing the budget causes problems. It is the structural problem that needs to be corrected.

We are going to address issues II and III simultaneously, because they are closely related. (See chart 11, p. 647.) The first issue, issue II, is: Are future operating budgets underestimated? The second issue is: Is the bulk of future budget growth being allocated to procurement?

ALLOCATION OF FUTURE BUDGET GROWTH

This slide displays two historical 5-year defense plans—that is, the fiscal year 1981–85 FYDP and the fiscal year 1983–87 FYDP—the current 5-year defense plan. That is, the fiscal year 1985–89 FYDP—and the requests for the 1981 supplemental and the 1982 amendment. (See chart 12, p. 648.)

On the vertical scale, we have plotted the average annual real growth projected in each one of these plans, including the 2-year period for the 1981 supplemental and the 1982 amendment. The growth is depicted in terms of average annual growth, so they are comparable for the different categories of the DOD budget. The dotted bar represents projected growth in the overall budget growth. The clear bar represents what I am calling investment on this side, which is procurement plus military construction. It turns out that the military construction is a very small part of this quantity, the vast bulk, of it is procurement. And the bar with the sloping lines is what I call the operating budget, which is the sum of the operations and maintenance budget, the military personnel budget, some undistributed contingencies, and the stock funds.

A better approximation of the operating budget would be to also include replenishment spares in this category. They are in the procurement budget, and going back through history, I just did not have time to pull them out. When we examine the current budget, we are going to make this adjustment. It does not really change anything, though.

This chart reveals that regardless of which historical budget we are examining, we allocate more growth to procurement, and we finance the higher internal growth rate to procurement with the assumption that we can hold down the growth rate in the operating budget. The only categories we have not examined in this depiction here are military retirement, and RDT&E, and there is not enough discretionary money in these categories to finance the higher procurement growth rates.

So we see a pattern that goes from budget to budget: higher growth rates are allocated to procurement, and this is financed by the assumption that we can contain the growth rate in the operating budget to a level that is less than the overall DOD budget's growth rate.

Now, it may appear that the mismatch between the growth rates in the operating budget and the procurement budget is decreasing in the current plan. However, when you examine the current budget on a year-to-year basis you find that it is front-end loaded with procurement growth.

FISCAL YEAR 1985-89 FYDP ALLOCATION OF FUTURE GROWTH

The way the budget is currently structured, we have more growth early on and less growth later on for all categories. (See chart 13, p. 649.) This chart is a slightly different depiction, the bars plot the year-to-year growth rates in the current budget. Replenishment spares have been added into the operating budget and procurement is depicted without military construction. So we have a better depiction of the operating budget. You can see that the budget is front-end loaded with procurement growth and then we have decreasing rates of growth in all categories in the outyears.

Senator BIDEN. And we will never catch up.

Mr. SPINNEY. No, sir; and in fact, that is the key point on this slide. If you compare the growth rate in the operating budget projected for the first 2 years to the growth projected for the 3 out-years, you can see that we are making the assumption that we can

decrease the rate of growth of the operating budget over the long-term. Now, we have to ask ourselves if that a realistic assumption; because until the recently, the operating budget has been growing faster than the DOD budget as a whole. This relationship has changed a little in the last couple of years, but it is hard to say whether there is any kind of trend evolving because we are buying equipment that is even more expensive to operate.

OPERATING COST GROWTH

So let's examine the question of whether or not this is a realistic assumption. To do that, we are going to have to address the problem of operating cost growth.

Over the long term, the DOD's force structure has been shrinking. (See chart 14, p. 650.) Moreover, it has been shrinking dramatically. For example, if we compare 1957 to 1984, we see that the active inventory of Air Force aircraft has shrunk by 63 percent. In other words, the current inventory is 37 percent of the size it was back in 1957. The Navy's active ship inventory shrunk by 50 percent; active-duty Army manpower is down by 22 percent. We have a smaller force today than we had in 1957.

But if we look at the operating budget in 1957 and compare it to today's operating budget, we find that today's budget is 14 percent larger in constant dollars than the 1957 operating budget.

And when you break down the operating budget into its constituent categories, you can see why it is larger. Growth in the O&M budget has overwhelmed reductions in the personnel budget. The personnel budget has been reduced because we have fewer people; it is not because pay has gone down. The reduction is due to fewer people.

In constant dollars, the 1984 O&M budget is 60-percent higher than the 1957 budget, and this increased budget supports a force that is roughly half the 1957 size. So, on a per unit basis, operating costs are going through the roof.

Senator BIDEN. Now, how much is that related to salary and benefits?

Mr. SPINNEY. Part of it. A good deal of the O&M budget is civil service salaries.

Senator BIDEN. When you say "a good deal," give me roughly.

Mr. SPINNEY. I am not sure of the breakdown—almost half.

EXTERNAL AND UNCONTROLLABLE FACTORS

We can break down causes of operating cost growth into two general categories. (See chart 15, p. 651.) The first are due to external or uncontrollable factors. A good example of that would be the increased price of oil. That kind of change is just something you have to live with and you have to adapt to. And when you are doing your planning, you should accept those uncertainties and make decisions in such a way that you minimize your exposure to their risks. A good example is the obvious fact that the demography of our country is changing, and there are going to be fewer young people over the next 20 years or so, relative to the population as a whole—

Senator BIDEN. And we will have more women.

INTERNAL FACTORS

Mr. SPINNEY [continuing]. And more women, yes, so we may want to change our equipment to make it less labor intensive.

We also have internal factors contributing to the growth in operating costs. They are controlled by our policy decisions. Here, the key issue is that our plans should reflect the future consequences of those decisions. We make decisions today that have impacts extending far into the future.

You can break down the internal factors into three basic categories. Operating costs are driven by the size of the force; the tempo which we operate the force; and the technical complexity of the equipment in the force.

Obviously, if you increase the size and the operating tempo, you are going to drive up the operating budget. That is a very straightforward relationship.

The influence of technical complexity is less well understood. My research has shown me, and I believe this without any reservation, that if we increase the complexity of our weapons, we are going to drive up the complexity of our support tail, and that is going to increase our operating costs.

Senator GRASSLEY. Mr. Spinney, we are going to have to take a 10-minute break for a vote. We have 7 minutes left on our vote, and it will be about 5 minutes over and 5 minutes back. But we will return.

[Recess.]

Senator GRASSLEY. We appreciate your patience, especially you, Mr. Spinney, and I would like to have you start now where you left off.

Mr. SPINNEY. Yes, sir. If you will recall, we were talking about the causes of growth in the operating budget and the external and internal factors.

SIZE, OPERATING TEMPO, AND TECHNICAL COMPLEXITY

The three internal factors over which we have some control are the size of the force, the tempo at which we operate the force, and the complexity of the force.

The first two categories, size and operating tempo, are very clear. If you increase the size and you increase the operating tempo, up go your operating costs.

If you increase the complexity of your equipment, you magnify the complexity of your support tail, your logistics tail, and that is going to drive up your operating costs.

Now, this is an area where there is a lot of confusion. Many people argue that these high tech, complex technologies actually reduce the operating and maintenance costs. You have to be very careful how you describe these costs. The best example I can think of is to compare the F-4 to the F-15. On the flight line, the F-4 uses more maintenance man-hours per flying hour than the F-15 and the F-15 is more complex than the F-4. The problems in the F-15's operating costs are not at the flight line. In essence, we have designed technologies to shift maintenance away from the flight line to the depots. And at the depots, the costs are much higher for the F-15 than the F-4. So if you are looking at the operating cost

problem, you cannot say that because the F-15 uses less maintenance man-hours per flying hour than the F-14, it is cheaper to operate. You have to look at the entire support system. It turns out that there is no free lunch. When you buy more complicated equipment, it is more expensive to operate, because that increasing complexity increases your dependence on intermediate and, more importantly, on distant depot maintenance levels, and you have to transfer more materiel back and forth between the flight line and the depots. You are maintaining some of your equipment in what are functional equivalents of factories. You increase your dependence on computerized test equipment, which must also be maintained and supported, and some of this equipment is very difficult to maintain and support. You increase your dependence on high human skills; that is more expensive to obtain and retain. You increase your dependence on high-cost spare parts which must be more precisely controlled by your inventory and distribution systems. So you require a more expensive logistics system. You rely more and more on expensive contract maintenance support.

So these are the reasons why our operating costs are going up.

DECREASING RATE OF GROWTH IN OPERATING BUDGET OPTIMISTIC

We can answer question No. 2. The question is: Does the 5-year defense plan underestimate future operating costs? (See chart 16, p. 652.)

And these are the key points that we can make: The FYDP projects moderate increases in our force size. For example, we are going to a 600-ship Navy, and that is a slightly bigger Navy than we have today. It is DOD policy to increase combat readiness. Now, this implies, among other things, increased operating tempos to support increased combat training. The modernization program in the 5-year defense plan is accelerating a trend toward more complex hardware.

So we project a growing force that is more expensive to operate, and is projected to operate at an increased tempo. That implies an increasing rate of growth in the operating budget over the long term. However, if you examine the operating budget, we have a decreasing rate of growth in the operating budget over the next 5 years. So our plan contains the suggestion of a mismatch.

I think the best thing that we can say about the assumption that we can decrease the rate of growth in the operating budget over the long term is that it is an optimistic assumption. We may be able to do it, but if history provides any insight, we probably will not. To date, we have not been able to do it. I am going to provide some more information on this particular point at the very end of the briefing. This is a crucial point.

This impression of optimism is magnified when we recall how our readiness problems developed during the 1970's. Basically, we tried to hold down the operating budget, through every hook and crook we could come up with.

Senator GRASSLEY. Five or six charts back, that is what your bar chart was showing?

Mr. SPINNEY. Yes, sir. We are projecting a decreasing rate of growth. That is exactly right. Higher growth in the near-term and

lower growth in the out-years; meanwhile, we want to expand the size of the force, increase combat-readiness, and make the force more complex.

Senator GRASSLEY. And what is demonstrated on this chart would also be demonstrated for any 5-year period of time in the last 30 years?

Mr. SPINNEY. In general, that is correct. The pattern would be different, but that is correct, yes, sir. I do not know about the last 30 years, but certainly, for the last 10.

Senator GRASSLEY. The only reason I said 30 years is that a couple of times in your presentation you had said for the last 30 years—but at least, for the last 10 years?

Mr. SPINNEY. You see, we did not have 5-year plans earlier on; that is why I responded as I did. But I have examined our decision patterns over 30 years, and clearly, we have tried to hold down that growth in the operating costs over the long term. No question about that.

Senator GRASSLEY. OK.

BULK OF PREDICTED BUDGET GROWTH ALLOCATED TO PROCUREMENT

Mr. SPINNEY. Issue 3 is related to Issue 2. Is the bulk of predicted budget growth being allocated to procurement? Obviously, it is. (See chart 17, p. 653.) We saw it in those bar charts earlier on. The procurement bars are higher than the operating bar in the charts.

We can now make an interim summary. (See chart 18, p. 654.) Up to this point, our discussion suggests that current plans conform to the historical pattern. There is reason to suspect that overall budget growth projections are optimistic, that future operating budgets are underestimated, and the bulk of future budget growth continues to be allocated to procurement.

Now, this pattern of optimism assumptions creates an interplay of pressures. You have an overall budget that turns out to be less than expected—meanwhile, you have the potential for unplanned growth in the operating budget. So procurement is going to be squeezed. We have a magnified risk of a procurement squeeze, if either the total budget growth does not materialize and/or operating budget growth is higher than predicted.

Now, given that we have this situation in our plans, and if we want to plan this way, then we should balance this pattern of optimism with conservative pricing strategies in the procurement budget. Then we would have a balance of conservative and optimistic planning assumptions.

CONSERVATIVE OR OPTIMISTIC PRICING ASSUMPTIONS IN PROCUREMENT BUDGET

The next section addresses this issue—do we have conservative or optimistic pricing assumptions in the procurement budget? (See chart 19, p. 655.) Now, if the procurement costs turn out to be higher than planned, the procurement squeeze is going to be magnified even further.

MODERNIZATION STRATEGY

We examine our modernization strategy, we see that it depends upon the interaction of two crucial financial assumptions. (See chart 20, p. 656.) The first assumption is what I call the "bow wave" assumption. The second assumption is the assumption that future unit costs will decrease.

The bow wave assumption is the assumption that the procurement budget will grow faster than the DOD budget as a whole, and we have seen that the bow wave assumption is financed by the optimistic assumption that the operating budget will grow slower than the DOD budget as a whole.

The assumption that future unit costs will decrease is the assumption I specifically addressed in last year's briefing to this committee. It embodies the learning curve hypothesis and the other assumptions that I described in the *Plans/Reality Mismatch*. I am not going to describe these assumptions in too much detail today. They are described in the report I submitted to this committee last year.

The key thing to understand is that the interaction of higher budgets and cheaper unit costs permit predictions of faster modernization in the future. You have to have both. And if you do not get the higher budgets, then you have the conditions that are going to destabilize your costs. There are other factors that destabilize the costs, but if you do not have these higher budgets which permit the higher procurement rates, then you have a destabilizing condition,

BOW-WAVE ANALYSIS

If we are going to determine if there is any optimism in our pricing assumptions, we have to first determine how optimistic this bow wave assumption is. Future price declines depend upon the emergence of the bow wave. So we must first analyze the bow wave assumption.

This chart (see chart 21, p. 657), which is analogous to the chart describing the overall DOD budget, compares the line of actual procurement appropriations to planned appropriations. The heavy solid line depicts the 1983-87 5-year defense plan. The light solid line depicts the 1984-88 5-year defense plan. The dashed line depicts the current 1985-89 5-year defense plan. Note the pattern of departure of actual appropriations from the planned appropriations. Now, to implement the current budget, we need 19 percent real growth in 1985. That compares to 13 percent real growth for the overall DOD budget. In other words, we need more growth in the procurement budget. We see that the pattern of departure appears to be magnified relative to the pattern depicted earlier for the overall budget.

Let's see what growth would be required if we assume smooth budget increases in the outyears. This chart reveals that we would need roughly 10 percent real growth in each of the next 5 years to implement the bow wave. (See chart 22, p. 658.) Moreover, this is optimistic, because it assumes we can absorb losses in the near term and transfer them into the far term at no cost. If the procurement budget were to grow at 5 percent per year, the difference between our planned requests and actual appropriations would amount to

\$81 billion in procurement budget reductions. If growth declines to 3 percent per year, the budget reductions would increase to \$112 billion.

Now, the 10 percent growth that is required to break even on the procurement budget compares to 8 percent growth for the DOD budget as a whole. In other words, the procurement budget is under more growth pressure—which is a straightforward conclusion, given our internal budget allocations.

I want to stress that although I started with the 1983 budget, this pattern is the same pattern that existed through the seventies. In 1973 or 1974 I constructed some charts like these. They had the same pattern. The slopes were different. So we are not seeing anything new or different.

BOW-WAVE SUMMARY

We can now summarize the bow wave analysis. (See chart 23, p. 659.) Recent experience indicates the bow wave is not materializing. The requested budgets are not being appropriated. Of course, all the declining future cost predictions are predicated on those budgets being available.

In terms of the growth rates required to get back on track, the plans/reality mismatch is more severe for the bow wave than it is for the overall budget.

And the FYDP/scenario mismatch indicates that even for reasonably high rates of growth, for example, 8 percent a year, we are still going to have to identify substantial budget cuts.

This situation implies that a realistic pricing strategy, should account for the uncertainties inherent in this unfolding mismatch. We need a very conservative pricing strategy, because procurement pricing is the only area left in the DOD budget for conservatism. As we have seen, the other categories are optimistic.

Put another way, an optimistic pricing strategy would create additional pressures that magnify the unfolding mismatch.

ANALYSIS OF PRICING STRATEGY IN DOD'S PROCUREMENT BUDGET

Now, I want you to keep these thoughts in mind as we go through the DOD's procurement budget and analyze its pricing strategy. First, we will take a snapshot of projected costs, and then we will compare the projected costs in the current 5-year plan to the projected costs in last year's 5-year plan.

This slide will be used to explain our snapshot of projected unit costs. (See chart 24, p. 660.) Generally, we program declining unit costs into the outyears. One way of summarizing these declines is to compare the fiscal year 1989 unit costs to the fiscal year 1985 unit costs, and we are going to make this comparison in constant dollars.

PLANNED UNIT COSTS

This table displays four weapons procurement plans: the AMRAAM, F-15, the Bradley fighting vehicle, and the Tomahawk cruise missile. In the case of the AMRAAM, in 1985, we have projected that procurement costs will be \$2.3 million. Its unit cost is

projected to drop to \$270,000 by 1989. That is a decrease of 88 percent. The F-15 goes from \$42.6 to \$25.7 million, or a decrease of 40 percent. The Bradley goes from \$1.45 to \$1.09 million, a decrease of 25 percent. And the Tomahawk goes from \$3 to \$1.5 million, or a decrease of 50 percent.

PLANNED PROCUREMENT UNIT COST CHANGES

Now, in the next table, I am going to list 89 procurement programs, by these projected unit cost decreases. Now, remember, we are ignoring what happens between 1985 and 1989. The profiles would hop around a little. But we are just trying to get a general snapshot of the cost declines that we are projecting into the future.

Some of these programs may not be planned for procurement over the entire 5 years, and for these programs, the table will compare the first year to last year.

This table lists the 89 programs. (See chart 25, p. 661.) They are rank ordered by the magnitude of the projected cost decline—AMRAAM being the highest at minus 88 percent. So the table goes from the big decreases to the big increases.

Note that the first and second columns are all decreases, and the decreases stop at the top of the third column. It is obvious that our procurement plans are dominated by this prediction of declining future costs. In the next slide, I will summarize this slide. The first grouping will include the range of 45 to 88 percent cost decreases; the second, from 20 to 44 percent; the third, 0 to 20 percent; the fourth, the nonapplicable. The nonapplicable category means they are only programed for 1 year, so you cannot have a decrease. The final group includes the increases.

Senator GRASSLEY. Is there anything unique about the group?

Mr. SPINNEY. No, sir. The basic selection criteria that they had had to be in my data base, and they comprise most of the major programs in the major weapons procurement accounts. There were a few programs that, because of my time constraints, were dropped out of this analysis when it is compared to last year's analysis—like the ground-launched cruise missile. The computer coding was changed so it did not come out in the new printouts. So there are a few changes like that, but basically we have the same list as last year. It is very representative.

Senator GRASSLEY. Well, as I recall from last year, you showed us, I think, 60 different weapons systems—

Mr. SPINNEY. Ninety-six

Senator GRASSLEY [continuing]. 96—every year from 1977 through 1982. And I thought every one of those with the exception of one showed that the learning curve never materialized.

Mr. SPINNEY. That is basically correct. I am not sure I would say every one; there were a few that came in higher, but not many.

Senator GRASSLEY. OK.

Mr. SPINNEY. This data is out of the same data base, and it is just updated. I have the charts that I showed this committee last year, and we see basically the same pattern. I am not going to show them in this briefing.

PLANNED COST REDUCTIONS

This table summarizes the planned unit cost reductions. (See chart 26, p. 662.) We have 17 programs which project greater than 45 percent unit cost declines. Their 5-year cost comes to \$63 billion. This amounts to 19 percent of the sample size, 27 percent of the sample cost.

In the 20 to 44 percent range, we have 25 programs projected to cost \$88 billion; 38 percent of the sample on a dollar basis, 28 percent on a numbers basis.

Note that the two top categories have a larger percentage of the sample in terms of dollars than they do in terms of programs. In other words, these are big programs. They are also new programs. The two top categories, for example, amount to 47 percent of the sample and 65 percent of the sample cost. So we have roughly half the sample number and two-thirds the sample cost in those two top categories.

If we include the third category and examine all the declines, they amount to about 72 percent of the sample, and 89 percent of the sample cost. So you can see that the bulk of our dollars, 89 percent of our dollars, is associated with programs that predict future cost declines.

This pattern of projected cost declines magnifies our financial risks, because if you make an error in the cost prediction for an expensive program, the penalty for that error is larger. A 5-percent error on a big number is larger than 5 percent on a small number.

Large cost declines are also concentrated in new programs, and these are the programs with very little production experience. So, these cost estimates are inherently more uncertain, and because the bulk of the procurement is programed at the low unit cost in the outyears, a 5-percent error can have much greater effect in terms of total procurement costs.

So we have a pattern of assumed future cost declines that magnifies financial risk in our plan. That is the key point to be concluded from this slide.

F-15 PROCUREMENT PLANS

Now we are going to examine how our future cost predictions change from year-to-year. We are going to compare current 5-year plan to last year's 5-year plan. To illustrate our method of making the comparison, we will examine the plans for the F-15. (See chart 27, p. 663.) This chart plots unit cost as a function of cumulative quantity. It is exactly like the spaghetti diagrams I constructed last year; except, instead of being zeroed at 1976, we have arbitrarily set zero at 1983. Actual appropriations are indicated by the circles.

The heavy line depicts the 5-year plan that was submitted a year ago last January—that is January 1983. This February we submitted a new 5-year plan which, in essence, stretched out F-15 procurement. The new plan is indicated by the thin solid line and the dashed line. We have slowed production rates on the F-15. You can see that the cumulative quantity planned for procurement by 1989 is about where it would have been in last year's plan by 1988. So in effect, we have lost a year. Comparing the future average costs in the new plan to the previous plan, we can see that they have in-

creased. So, for the F-15, we have slowed production rates, and we have increased average unit costs. Now, in the charts that follow, we will compare the fiscal year 1985-89 FYDP to the fiscal year 1984-88 FYDP and we will make the comparison in terms of the future quantity and the average cost changes. Our comparison will be limited to the 4 common years—that is fiscal year 1985 through fiscal year 1988. So we are going to compare the thin line from fiscal year 1985 to fiscal year 1988 to the thick line from fiscal year 1985 to fiscal year 1988, in terms of the total quantity planned for procurement and the average unit cost of that total procurement. In other words, we will compute the average unit cost for fiscal year 1985-88 segment of each line. When I say there is an average quantity reduction of 20 percent, that means that the horizontal distance between fiscal year 1985 and fiscal year 1988 is 20 percent less in the new plan than it was in last year's plan. If there is an average unit cost increase of 20 percent, it means that the average cost for the planes programed in those 4 common years is 20 percent higher in the new plan than it was last year. We may still be projecting future cost declines, but now the average unit cost is expected to decline at a slower rate.

So when I say there is an average unit cost increase, all I am saying is that the cost/quantity curve has shifted up. This is a crucial point.

DISTRIBUTION OF COST/QUANTITY CHANGES

Initially, we are going to examine the quantity changes and the cost changes separately. (See chart 28, p. 664.) These changes are shown on this table. We are going to define the range of change as follows: A significant decrease is an 11-percent or greater decrease in either quantity or cost. A moderate decrease is a decrease between 3 and 10 percent. An insignificant change is from -2 to +2 percent; a moderate increase or a significant increase would be defined similarly.

Examining the quantity changes in isolation, we see that out of our sample of 89 programs, 33 were reduced in quantity by at least 11 percent, 35 remained unchanged, 12 were accelerated by at least 11 percent, and only a few programs fall into moderate categories. If we look at the cost changes, only 22 programs remained unchanged, and 17 had significant cost decreases, 20 had moderate cost decreases, and so forth. The 5-year cost of the programs in each change category are also listed.

Now, in the next series of slides, I am going to correlate the quantity changes to the cost changes. Normally, when you cut back on production rates, you would expect costs to go up. We are going to build up a matrix by correlating the cost and quantity changes.

This slide displays the programs with insignificant changes. (See chart 29, p. 665.) I am including two programs with moderate quantity changes because they are borderline cases. So these are the programs that did not change when we compare last year's 5-year plan to this year's plan. The underlined programs are the big programs—that is, the top 25 percent in our sample. In other words, we have 89 programs; and the 22 largest have been underlined so we can see the distribution of the big programs in this chart. The

heavy lines surrounding the four boxes mean that at least 10 percent of the sample cost falls into the category indicated by each box.

The chart should be read as follows: if a program has a quantity reduction greater than 11 percent and a cost increase greater than 11 percent, it falls into the upper left-hand box. If it has a quantity reduction greater than 11 percent and a cost reduction greater than 11 percent, it falls into the lower right-hand box—and so forth.

So we are going to place each of the 89 programs on this chart.

Senator GRASSLEY. We are going to have to take another 10-minute break, Mr. Spinney. There is another vote on—I should not say that. There may be several more votes. So we will have to take another break. Thank you very much.

[Recess.]

Senator GRASSLEY. Mr. Spinney, would you proceed with the explanation of the insignificant and significant changes, as you fill in the boxes?

EXPLANATION OF INSIGNIFICANT AND SIGNIFICANT CHANGES

Mr. SPINNEY. This slide displays the programs which have been cut back in quantity and increased in cost. (See chart 30, p. 666.) The new plan slowed future production rates or, in some cases, truncated future production. Now, this chart does not tell us whether the cost increase caused the production rate slowdown, or the production rate slowdown caused the cost increase. The programs on this slide have lower production rates and higher costs. Their future costs may still be projected to decline, but in the new plan they are projected to decline at a slower rate—for example, the F-15.

This slide displays the programs for which the new plan cut back future quantity and reduced future costs, and those programs with reduced future costs and insignificant quantity changes. (See chart 31, p. 667.)

REDUCED PROGRAM COSTS

In effect, the programs in this chart have been repriced, to lower future costs and some of them have also been cut back in quantity.

This repricing action reduced the 5-year cost of all these programs. The programs which were cut back in quantity (re: previous slide) also reduced the 5-year costs. Both the production slow-down and the repricing to lower future costs generated savings, if you will, that enabled us to place our procurement plans under a more constrained budget topline and to finance some cost growth in programs. This slide displays the programs with cost growth. (See chart 32, p. 668.) Savings are used to finance an increase in the future production of a few programs. This chart displays the programs with increased future production rates. (See chart 33, p. 669.)

PREDICTIONS ABOUT THE FUTURE

Now, in all these slides, we are describing changes in our predictions of the future. When you think about it, we are discussing our hopes and dreams. And we can take a snapshot of how we changed

our hopes and dreams in a 1-year period by putting all these changes on one slide.

To reiterate, 5-year costs were reduced by, one, cutting future production rates and accepting increases in unit costs, and two, by repricing programs with lower future costs. (See chart 34, p. 670.) These actions generated savings and enabled us to adjust to a more restrictive budget topline, and to finance predictions of future cost growth or production rate accelerations for a few programs.

Now, this chart is a snapshot between January 1984 and January 1983. In the next series of slides, I am going to show you how these changes evolved. This chart is limited to two points in time. We will get an idea of the flow of changes in the following discussion. And bear in mind again—I cannot stress this too much—we are talking about changes in our perceptions of the future. These are not real costs. These are predicted costs.

Senator GRASSLEY. As a result of adjustments that had to be made because of the present budget year we are in.

Mr. SPINNEY. In part, yes, sir.

Senator GRASSLEY. And the decisions made in the appropriations bill and the authorization bill of 1983.

Mr. SPINNEY. That is part of the problem.

Senator GRASSLEY. But not totally.

Mr. SPINNEY. Not totally, sir. Much of this reflects internal activity.

Senator GRASSLEY. Then, maybe I ought to ask—maybe I am thinking wrong. Maybe it was not even a significant aspect of this change.

Mr. SPINNEY. Well, I think it was significant in the sense that we changed our subsequent projection in the 5-year plan. That affected the overall topline. But these changes themselves were driven more by internal decisions.

Senator GRASSLEY. OK.

Mr. SPINNEY. We had to fit our overall program into a more constrained budget, in effect so we are juggling things. (See chart 35, p. 671.) Let's examine the flow of changes from the fiscal year 1984-88 to the fiscal year 1985-89 5-year defense plan. (See chart 36, p. 672.) The fiscal year 1984-88 5-year defense budget is our baseline against which we measure the changes. You can think of all the programs in our sample as being concentrated in the no change box in the fiscal year 1984-88 5-year defense plan. Remember, we are examining changes in our predictions for the 1985-88 period. That is the 4 common years. The no change box is the striped box on this side.

Senator GRASSLEY. The B-1 bomber being in that box, in that particular place, would not signify in and of itself that the Air Force will be able to build 100 B-1's for \$20.5 billion, would it?

Mr. SPINNEY. No, sir. It just says we did not change our plan between this year and last year. We are still talking about future costs. That is correct, sir.

DEPARTURES FROM FUTURE PREDICTIONS

So we are going to measure departures from this box. We are basically talking about departures in our predictions for the future. (See chart 37, p. 673.)

The first departure occurred with the publication of the program objective memorandum, which is the first draft of the new 5-year defense plan. The POM is published in May. The 1985 POM, as it is called, came out in May of last year. This slide displays the changes that occurred in the 3½ months between the fiscal year 1984-88 FYDP in January 1983 and the fiscal year 1985-89 program objective memorandum in May 1983. But these changes do not represent the only time we change our plans during the budget cycle. From May until January, we massaged the POM and converted it into a new FYDP—the POM is just a first draft; you might think of it as a working copy. (See chart 38, p. 674.) Between May 1983 and January 1984 we made additional changes to our plans. The programs that were changed during this period are encircled on this chart. In the next slide I am going to the pattern of these changes. (See chart 39, p. 675.)

This slide describes the pattern of the May-to-January changes, it represents our decision process in action.

Senator GRASSLEY. With all these lines here—I assume a chart like this demonstrates, in answer to those who say a freeze in the defense budget would create a terrible problem, that really, the Defense Department is very flexible in what they can do. [Laughter.]

Senator GRASSLEY. Isn't that what that proves?

Mr. SPINNEY. I think that is a fair conclusion, yes, sir
Senator GRASSLEY. OK.

STRUCTURAL PROBLEM VERSUS INCREASE OR DECREASE IN BUDGET

Mr. SPINNEY. I think this is a good point to clarify the structural problem as opposed to the question of whether we should increase or decrease the budget. The way we are doing business now, increasing or decreasing the budget could eventually make our problems worse. We behave this way when we increase the budget, and we behave this way when we decrease the budget. It is going to change specifically—

Senator GRASSLEY. But it is worse when you decrease—

Mr. SPINNEY. I am not sure, because when you increase it, you may create more severe problems downstream. Increasing the budget may not be as bad in the near term, but it could be worse over the long term.

Senator GRASSLEY. Well, just speculate on a 1-year freeze.

Mr. SPINNEY. I do not think it would hurt. You are putting me on the spot, there.

Senator GRASSLEY. Well, if you want to correct the record later on, you will have the opportunity.

Mr. SPINNEY. Thank you, sir.

This is my personal view. I do not think it would cause much of a difference. The way I understood your earlier statement, you seemed to say that you wanted a freeze to buy time; presumably, we would work on the structural problems during that time period.

Senator GRASSLEY. Yes, and we would be freezing budget authority, not outlays.

Mr. SPINNEY. Right. I do not think anybody could make the argument that it would be worse to freeze the budget than to cut the budget or to increase the budget. The structural problem is what we have to solve.

Senator GRASSLEY. I do not suppose you have ever traced, in your study—it probably was not a part of your study, but let me ask, anyway—you do not trace those changes back to a specific policy decision involving a specific person or a specific group of people—or, are those all traceable directly back to the Secretary of Defense, eventually?

Mr. SPINNEY. Oh, no. You are dealing with a very large bureaucracy which has many constituent elements. These elements are all fighting to save their programs. This slide describes the results of that battle. You are making compromises everywhere.

Senator GRASSLEY. Well, would it be possible, the way that DOD makes decisions, that for the line from the MK-48 over to "Insignificant," the uppermost arrow, that Joe Doe is responsible for that decision—or is it an impossibility to hold a person or a group of people responsible for that decision? Has your study ever looked at that question? These decisions don't just happen, right?

Mr. SPINNEY. Yes, sir, that's right.

Senator GRASSLEY. Somebody made a decision.

Mr. SPINNEY. That is right. It might be possible, for example, after the publication of the POM, in the case of the Mark-48, the Navy may have decided to move it over here, because of other reasons that we do not know about.

On the other hand, this move could have been done during the review process that modifies the POM, in which case it would have been done by the civilians in OSD.

Senator GRASSLEY. I guess my point is not necessarily to hold accountability, but is there a rationale for it, or does it just happen?

Is there a reason?

Mr. SPINNEY. In a macro sense, I do not think there is. In a micro sense, you could probably find a reason for every one of these things. But when you examine this kind of instability from a macro perspective, it appears that we are dealing with a process aimed at resolving many competing interests—interests that are trying to adjust to budget constraints and cost growth, and everybody is trying to save their individual programs. So individuals are fighting to find any little weakness in the decision process.

You do not get promoted in the Pentagon by recommending that your program gets canceled.

Senator GRASSLEY. This is a snapshot of one 12-month period of time?

Mr. SPINNEY. Yes, sir.

Senator GRASSLEY. January 1983 to January 1984?

Mr. SPINNEY. Yes, sir. That is the right way to interpret it. And the net result of these changes is the chart that I showed you earlier, which is replicated here. (See chart 40, p. 676.) This is the same chart we saw earlier (i.e. chart 34.)

This is the end result of our decision process; it is a picture of how we changed our hopes and dreams about the future over a

1-year period. You can see that we made a large number of adjustments.

5-YEAR COST PROGRAMS

Now, in the next two slides, I am going to convert this slide into dollars and numbers of programs. The next slide counts up the number of programs in each box and the 5-year cost for those programs. Its purpose is to give us an idea of the distribution of resources involved. (See chart 41, p. 677.) I am going to use this slide as a transition to the next slide.

In the next slide, I am going to convert these numbers into bar charts, so that we can just make a quick visual comparison to get a direct impression of the distribution of funds. (See chart 42, p. 678.) The left and right scales have been adjusted so that if the percentage of programs in a particular category equals the percentage of the sample cost in that category, the bars would be of equal height. The significant quantity reduction and significant cost increases—16 percent of the sample and 14 percent of the sample costs, roughly, evenly distributed. The bars will be even. So you can get an idea of the percentage. That is what this chart shows.

This slide depicts the distribution of programs and the associated resources for each category of change. The scale on the right is a scale for the 5-year procurement cost in constant dollars, and it is associated with the "clear" bars. The scale on the left is the scale for the number of programs, and it is associated with the "dotted" bars. And when the bars are roughly equal—for example in the insignificant change category—the percentages are roughly equal, as well. If the "dotted" bar is higher than the "clear" bar, then the programs in that category tend to be smaller than the average size; if the "clear" bar is higher than the "dotted" bar, the programs tend to be larger than average size. You can see down here, for example, in the significant future cost reduction, essentially, repricing the future costs, we have a relatively few number of large programs.

REPRICED PROGRAMS SAVED MONEY

Now, these programs, from here over, these are programs that have production rate slowdowns and cost increases; that saved money. These programs were repriced for lower costs, and that saved money. That enables us to finance cost growth in these programs and accelerate production here, and come under a more restrictive budget. (See chart 43, p. 679.)

Because there are so many programs in the repricing categories (re also chart 31), we will examine these programs in more detail. This slide lists the programs which appear repriced to lower future costs. These programs, for one reason or another—and I do not know the reasons—are now cheaper in the future than they were last year. I have broken them down into the three services. Again, the underlined programs are the large programs.

There may be valid reasons for some of the repricing actions. In other cases, it may represent increases in optimism about future prices. For example, I think the MX's projected cost reduction is due to the fact that we changed the basing mode. It made the mis-

sile simpler and less costly. On the other hand, I do not know of any real changes in the SSN-688 or the CG-47 which would have caused a future cost reduction. There may be valid reasons but I do not know what they were.

You can see that in the case of the Navy, we repriced a total of 20 programs which are projected to cost \$70 billion; in the Air Force, 7 programs, at \$19 billion; the Army, 4, at less than \$3 billion.

Senator GRASSLEY. Well, I assume someplace in your study, you would be able to get an answer to that question that you said you could not answer—right?

Mr. SPINNEY. Yes. I just do not know the reasons. I did not have that much time to dig into it.

Senator GRASSLEY. Yes, but I mean, you would have the capability of answering the question.

Mr. SPINNEY. Yes, sir, I think so. If I did not, I know the people who would.

Senator GRASSLEY. I think that you ought to submit something for the record on that point.

Mr. SPINNEY. That is a big effort.

Senator GRASSLEY. Oh, it is?

Mr. SPINNEY. Yes, sir.

Senator GRASSLEY. Well, then, let me think about it.

Mr. SPINNEY. I am not saying it is not a good idea. It is just a big effort, and you have to realize that it could not be done very quickly.

Senator GRASSLEY. OK, then, ignore my request momentarily.

SUMMARIZING COST/QUANTITY CHANGES

Mr. SPINNEY. OK. We can summarize the cost/quantity changes. (See chart 44, p. 680.) In response to the unfolding budget squeeze—remember, we saw the bow wave was shifting to the right, essentially, squeezing the budget down—we adjusted our expectations and desires by, first reducing 5-year program costs. We did this in two ways: cutting back on production rates and accepting increases in unit costs. That affected 22 percent of the sample and 24 percent of the sample cost—roughly, a quarter of the sample. We repriced other programs to lower future costs. This action affected 35 percent of the sample and 39 percent of the sample cost.

I might also add that when I did this analysis with the fiscal year 1985-89 POM instead just the change the fiscal year 1985-89 5-year defense plan—that is, the analysis that I presented to the House Budget Committee earlier this year—this repricing category was only 24 percent and 24 percent. So, between May 1983 and January 1984, we increased the percentage of programs that were repriced from 24 to 39 percent.

Cutting production rates and repricing to lower future costs generated savings that enabled us to adjust to a more restrictive top line and at the same time, fund a few production rate accelerations—on a dollar basis primarily the F-16—which amounted to roughly 15 percent of the sample. Also, we were able to reprice a few programs to higher future costs—cost growth of some sort—and that affected roughly 6 percent of the sample cost.

So, this is how we adjusted our hopes and dreams.

Now, we can summarize our discussion of the pricing assumptions underpinning our procurement plans. (See chart 45, p. 681.) The issue is whether or not these assumptions are optimistic. And we can summarize the key points of our discussion; there were three of them.

The first is that declining future costs dominate procurement planning in a pattern that magnifies financial risk. The largest cost declines are concentrated in large programs and in new programs with little production experience. The penalty for error on these programs is greater.

Second, the declining cost predictions depend upon the emergence of the bow wave, but the bow wave is not emerging. We saw (re slide 21) how it is shifting to the right, and we have been absorbing budget cuts in the near term. However, the projections of declining costs are based in part upon the production economies—that is, high-rate production—associated with the big future procurement budgets.

The third point was that the 5-year defense plan adapted to the increasing budget squeeze caused by the shifting bow wave by stretching or truncating some programs and repricing others to lower future costs.

5-YEAR DEFENSE PLAN PRICING STRATEGY IS A HIGH-RISK STRATEGY

I think we can draw some conclusions from these points. I think the 5-year defense plan pricing strategy is not only an optimistic strategy, it is a high-risk strategy. The penalty for error is greater because of the pattern of the predicted cost declines. It is clear the bow wave is not materializing, and I have been in the Pentagon since 1972, and it has always been this way. It is just the normal thing. We used to talk about the bow wave in 1972 and 1973.

Senator GRASSLEY. Is it more high-risk today than in 1972-1973, or about the same risk?

Mr. SPINNEY. I cannot really answer that question. It is probably not much different. I am talking about the distribution of risk within the program. As far as the overall program is concerned, there is just no way to tell.

Senator GRASSLEY. OK.

Mr. SPINNEY. The bow wave is not materializing, so we do not have the resources required for the higher production rates.

Procurement stretch-outs—that is, production rate slowdowns—are short-sighted adjustments that increase costs. Our plans routinely make predictions of declining costs, yet we are taking short-term actions that increase costs.

Repricing to lower future costs is a short-sighted adjustment that magnifies optimism. Here, we have a situation that is unfolding in a way that undermines our plans—that is, one that is unfolding in a pessimistic fashion as far as the overall budget is concerned. So how are we responding in our pricing strategy? We are magnifying our optimism.

Given these kinds of unfolding circumstances, I think a more conservative pricing strategy is appropriate. This is the principal

recommendation I had last year. This is particularly important if we are not willing to cancel programs.

Have we canceled major programs in response to the unfolding budget constraint, and does our tendency to initiate new programs continue, particularly when planned budget growth is increased? (See chart 46, p. 682.)

PROGRAM CANCELLATIONS

This slide displays programs that were started up and canceled in the last three 5-year plans. (See chart 47, p. 683.) The fiscal year 1983-87 5-year defense plan was the last 5-year plan that increased future budget growth projections over the previous 5-year plan—that is, compared to the fiscal year 1982-86 5-year defense plan fiscal year 1983-87 5-year defense plan projected major increases in budget growth.

The programs that were started up are indicated in the three left-hand columns. An entry in the fiscal year 1983-87 column, means the program was started up in the fiscal year 1983-87, 5-year defense plan, and the number indicates the year in which production was planned to commence. For example, the LHD-1, a Navy program, was started in the fiscal year 1983-87 5-year defense plan and the plan was to appropriate production funds in fiscal year 1984.

The fiscal year 1984-88 5-year defense plan and the fiscal year 1985-89 5-year defense plan represented an increasingly constrained budget plan relative to the fiscal year 1983-87 5-year defense plan, and we see that fewer programs were started up.

Now, this is not a complete list; to get on this list, the program had to be in my data base, so it is a representative sample. Also, these are major programs; their 5-year cost is greater than the median cost of the sample, which is \$1.3 billion. So, this table only displays the bigger programs in our sample.

We can see that we started up many programs with some very significant long-term consequences. The table also shows us that we have not canceled many programs, and when you look at the pattern, you find that most of the cancellations are paperwork scrubs. For example, we canceled the third nuclear carrier. In the fiscal year 1984-88 5-year defense plan, the nuclear carrier was projected to be appropriated in 1988, the last year of that 5-year plan. It was zeroed in the current 5-year plan. So it is a paperwork scrub; there were no committed resources.

The DD-963 restart was predicted to come into the fourth year of the fiscal year 1983-87 5-year defense plan, then it was shifted out 1 year in the fiscal year 1984-88 plan, and finally it was canceled in the fiscal year 1985-89 5-year defense plan. This was another outyear paperwork scrub.

The CGN-42, a nuclear cruiser, amounts to the same thing—an outyear paperwork scrub.

We canceled the FFG-7—the frigate—but this action represents more of a normal termination than a program cancellation, because we had already procured the planned inventory. In fact, we actually procured more FFG-7's than we said we were going to buy. So this is more of a normal production line termination.

You can see the AWACS—that is, the E-3—has been zeroed in the fiscal year 1985-89 5-year defense plan, although there are major efforts underway to turn this decision around.

The MRASM was also a paperwork scrub. The CBU-90 was a cancellation, but it was canceled because of technical problems; it just did not work.

NO MAJOR PROGRAMS CANCELED

So, this chart indicates that we really have not canceled many programs. In fact, I think you can say that we have not canceled any major programs that were in production, with the possible exception of the AWACS.

Senator GRASSLEY. On your point of departure, on whether or not a program that is once started and has been canceled—is what—a decision by the DOD that that program ought to go through, or a decision by the Congress, or what?

Mr. SPINNEY. You mean if it is canceled.

Senator GRASSLEY. Yes. I mean, in order to cancel a program, you have to have one that has been authorized. What is the place of authorization that you are departing from?

Mr. SPINNEY. It could be all of the above. The rule that I used was that it had to be taken out of the entire 5-year plan in at least one of these three 5-year defense plans. Moreover, it could not reappear in a subsequent 5-year defense plan. So if we have a program, in the current 5-year defense plan that is projected to be terminated in fiscal year 1987, I would not count that as a termination. As long as it is still in the 5-year defense plan, it is considered an ongoing program.

Ultimately, Congress would have to stop appropriating funds to make the termination stick.

So, in a certain sense, I think my description of cancellation was a little more lenient than the one I think you are alluding to.

I think the answer to the question of whether or not we are canceling programs in response to unfolding budget constraints is no. (See chart 48, p. 684.) Concerning the question of whether or not the tendency to add new starts continues when planned budget growth is increased—we saw that the last time planned budget growth was increased—that was in the fiscal year 1983-87 5-year defense plan—we started up with a large number of new programs with very significant long-term consequences.

Moreover, if we look in the R&D budget, we see that there are serious R&D plans to initiate additional major procurements in the near term. For example, we have plans for a successor to the short-range attack missile, the Midgetman ICBM, the strategic defense initiative, a new light helicopter for the Army, the family of emerging technology systems for the conventional defense of Europe, and an advanced tactical fighter for the Air Force. These are all very large programs, and many of them are close to their being started up.

So I think you can say our actions to date suggest that our tendency to add new starts continues unabated.

DEBILITATING DISHARMONIES EXHIBITED

So we can wrap the discussion up. (See chart 49, p. 685.) The crucial issue that we have been trying to address is: Do our plans continue to exhibit those debilitating structural disharmonies? We are obviously talking about the future and no one can predict the future with certainty. But I think there is substantial reason to suspect that our plans continue to exhibit those structural problems. I think you can make a good case that overall budget growth projections are optimistic. There is reason to suspect that the operating budget is underestimated, and this underestimate enables us to finance higher growth in the procurement budget. Modernization plans continue to be predicated on the interaction of two high-risk—and what I believe to be are unrealistic assumptions. First, the bow wave will materialize, and second, that future costs will decline significantly.

The unfolding budget squeeze that we experienced in the last few years has not resulted in program cancellations. Moreover, and our recent experience indicates that our tendency to pump in new starts continues.

Now, these disharmonies reinforce each other and magnify any unfolding plans/reality mismatch. Our plans exhibit a pattern of mutually reinforcing optimistic assumptions. The overall budget is being squeezed and the operating budget growing; procurement gets squeezed; moreover there is cost growth within the procurement budget, which increases the pressure further. Finally, we do not relieve the pressure by canceling programs, and we increase the pressure by starting up new programs.

The net result is that we are under continual pressure to reduce readiness, slow rates of modernization, and ultimately, shrink the size of the force, even when the budget is growing. And I think the fact that we are under this pressure now, when we have the highest peacetime budget in history, demonstrates this point clearly.

Let me show you the magnitude of this problem over the long term.

FORCE LEVEL INDICES NORMALIZED TO 1957 LEVELS

This slide shows four force level indices and they are normalized to their 1957 levels. (See chart 50, p. 686.)

You can see that our Forces have shrunk significantly from the 1957 levels. Now, the dashed lines show the increases in the inventory projected by the current 5-year plan. That is our Force build-up.

Now, we are going to build a similar chart for budgets. (See chart 51, p. 687.) We are going to normalize the constant dollar budgets to the fiscal year 1957 level, and we are going to look at the operations and maintenance budget and the procurement budget. The dashed lines are the projections of the current 5-year plan. They are normalized to 1957 levels. So we are measuring changes from 1957 on a ratio basis.

It turns out that the 1957 procurement was larger than O & M. So whenever the procurement line is above the O & M line, it is also higher in absolute terms.

The O & M budget—the hump is Vietnam, is increasing over the long term. This is the cost of operating our Forces. Now, you have got to remember the Force is shrinking. We have a much smaller Force, but it is a lot more expensive to operate today, and you can see it is projected to be even more expensive to operate in the future.

Now we are going to combine all these curves on one slide. (See chart 52, p. 688.) This puts our Forces and budgets into a common perspective. For example, during the 1970's, we were under enormous pressure both from Congress and as part of executive policy to hold down the growth in the operating costs. However, we managed to drive the O & M budget down to a level that was 14 percent higher than the 1957 level. This occurred around 1974, and this was a minimal-readiness Force. We were not operating our Forces at a high tempo. In fact, our serious readiness problems began in this period.

This phenomenon is what I call the rising cost of low readiness. A much smaller Force is more expensive to maintain in a low-ready state. The rising cost of low readiness is more like a fixed cost than a variable cost. It is not purely fixed, but basically, the only way you can reduce this budget further over the long term is to shrink the size of the Force. The reason that we had this situation in the seventies is because the equipment that we bought in the sixties was more expensive to operate than the equipment it replaced. For example, in the Air Force, we were substituting F-105's for F-84's. The F-105 was a much more complex plane than an F-84; then we substituted F-111's for F-105's, another step up in complexity and cost. We substituted F-4's for F-100's, and now we are substituting F-15's for F-4's—again, increasing complexity and cost. The cost per flying hour is steadily increasing. So even though the Force structure is shrinking we are pumping in higher unit operating costs, and thus the O & M budget continues to increase. Today, we have to live with the consequences of these earlier decisions.

Now, in the current procurement plan, we are increasing the complexity of our equipment again. So, in effect, we are going to raise the floor of the low readiness cost up to some higher level. Now if in fact we reduce the defense budget we can reduce readiness, but we can only go down so far before we hit this new constraint. Then, the only way to cut the budget further is to have a procurement bloodbath or to shrink the Force. So you can end up having the procurement budget drop through the floor, just like it did after Vietnam. We are loading these rigidities into our decision process now.

Finally, remember that our force level projections assume that the prices in the procurement budget are realistic. If the costs in the procurement budgets increase over what is predicted, our force levels will shrink.

Now, when you put all these thoughts together, and you have what one colleague of mine calls "unilateral disarmament at ever higher cost."—i.e., forces shrink, readiness deteriorates, and modernization rates slow down.

STRUCTURAL PROBLEM IS BEING FACED

This chart shows the long-term consequence of that structural problem. (See chart 53, p. 689.)

So, in conclusion, I think we face a structural problem. The evidence to date suggests that plans and decisions exhibit the historical pattern.

To get at the structural problem, we have got to modify the way we put our plans together. We have to modify the basic assumptions and decisions shaping our plans. And particularly, if we are going to use optimistic assumptions in certain parts of our plans, we have got to balance them with conservative assumptions somewhere else. And of course, we have to discipline ourselves to cancel programs and to contain pressures to start up new programs.

Senator GRASSLEY. Thank you, Mr. Spinney.

[The following was received for the record:]

CHART 1

**DEFENSE PROGRAM ANALYSIS
AND EVALUATION:
IS HISTORY REPEATING ITSELF?**

MARCH 22, 1984

2732 4

CHART 2

THIS PRESENTATION DOES NOT PRESENT
AN OFFICIAL PA&E OR DOD POSITION
AND SHOULD NOT BE CONSTRUED AS HAVING
ANY OFFICIAL ENDORSEMENT

CHART 3

POINT OF DEPARTURE

PROGRAM ANALYSES — I.E. DEFENSE FACTS OF LIFE AND PLANS/REALITY MISMATCH — DESCRIBE THE FOLLOWING LONG-TERM — I.E. APOLITICAL — PATTERN:

- FIVE YEAR BUDGET PLANS EXHIBIT FOLLOWING STRUCTURAL DISHARMONIES:
 1. PLANNED BUDGET GROWTH IS CONSISTENTLY GREATER THAN ACTUAL BUDGET GROWTH
 2. OUT-YEAR OPERATING BUDGETS ARE UNDERESTIMATED
 3. BULK OF OUT-YEAR BUDGET GROWTH IS ALLOCATED TO PROCUREMENT
 4. OUT-YEAR COSTS OF INDIVIDUAL PROCUREMENT PROGRAMS ARE UNDERESTIMATED
- INDIVIDUAL PROCUREMENT DECISIONS MAGNIFY BUDGET DISHARMONIES:
 1. DOD OR CONGRESS RARELY — IF EVER — CANCEL MAJOR PROGRAMS
 2. WHEN PLANNED BUDGET GROWTH IS INCREASED, TENDENCY IS TO ADD "NEW STARTS"

CONCLUSION

- THESE STRUCTURAL DISHARMONIES CAUSE AN UNFOLDING MISMATCH BETWEEN PLANS AND REALITY
- INCREASING THE BUDGET, WITHOUT RESOLVING THE STRUCTURAL PROBLEM, IS LIKELY TO MAGNIFY THE MISMATCH

CHART 4

RAISES CRUCIAL QUESTION

DO CURRENT PLANS CONTINUE TO EXHIBIT
THESE DEBILITATING DISHARMONIES ?

PURPOSE

WE WILL ATTEMPT TO ANSWER THIS QUESTION BY ANALYZING:

- THE FY 85-89 FYDP
- HOW THE FY 85-89 FYDP CHANGED THE PREVIOUS (I.E. THE FY 84-88) FYDP'S PROJECTIONS

OUTLINE

WE WILL EXAMINE THE FOLLOWING STRUCTURAL ISSUES:

- I. DO DOD BUDGET PLANS CONTAIN REALISTIC FUTURE GROWTH ASSUMPTIONS ?
- II. ARE FUTURE OPERATING BUDGETS UNDERESTIMATED ?
- III. IS THE BULK OF FUTURE BUDGET GROWTH BEING ALLOCATED TO PROCUREMENT ?
- IV. IS PROCUREMENT PLANNING BASED ON OPTIMISTIC PRICING ASSUMPTIONS ?
- V. HAS CONGRESS OR DOD CANCELLED MAJOR PROGRAMS IN RESPONSE TO UNFOLDING BUDGET CONSTRAINTS?
- VI. DOES THE TENDENCY TO ADD "NEW STARTS" CONTINUE WHEN PLANNED BUDGET GROWTH IS INCREASED ?

CHART 6

I.

DO OUR BUDGET PLANS CONTAIN REALISTIC
FUTURE GROWTH ASSUMPTIONS ?

OR PUT ANOTHER WAY

DO PROJECTIONS OF FUTURE BUDGET GROWTH
APPEAR OPTIMISTIC ?

CHART 7

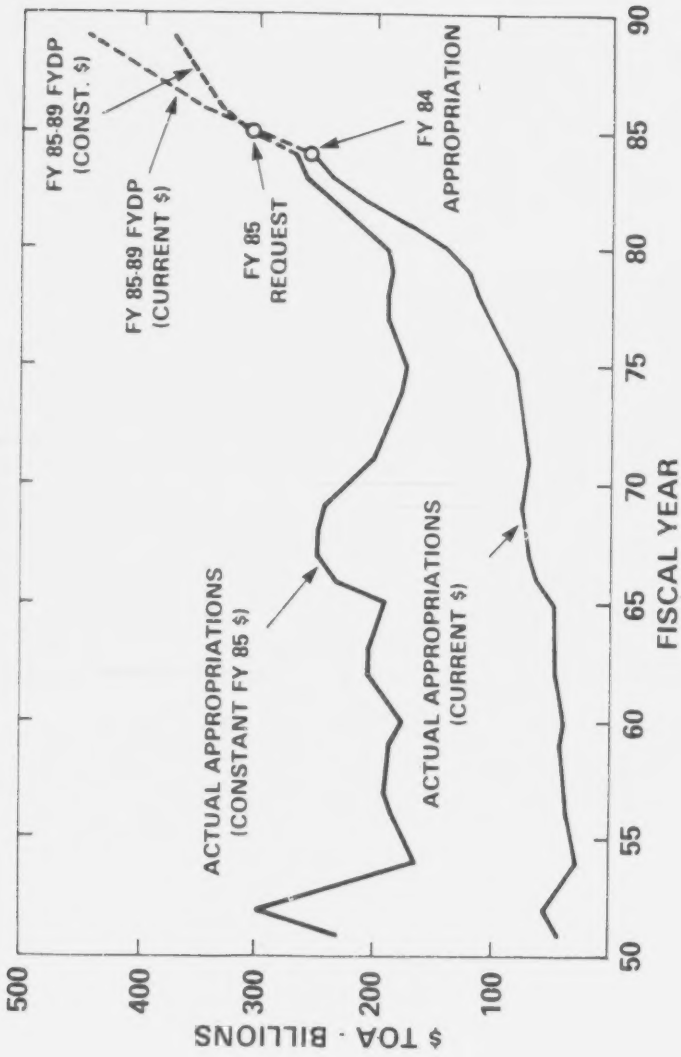
DoD BUDGET

CHART 8

DoD TOA: PLANS AND REALITY

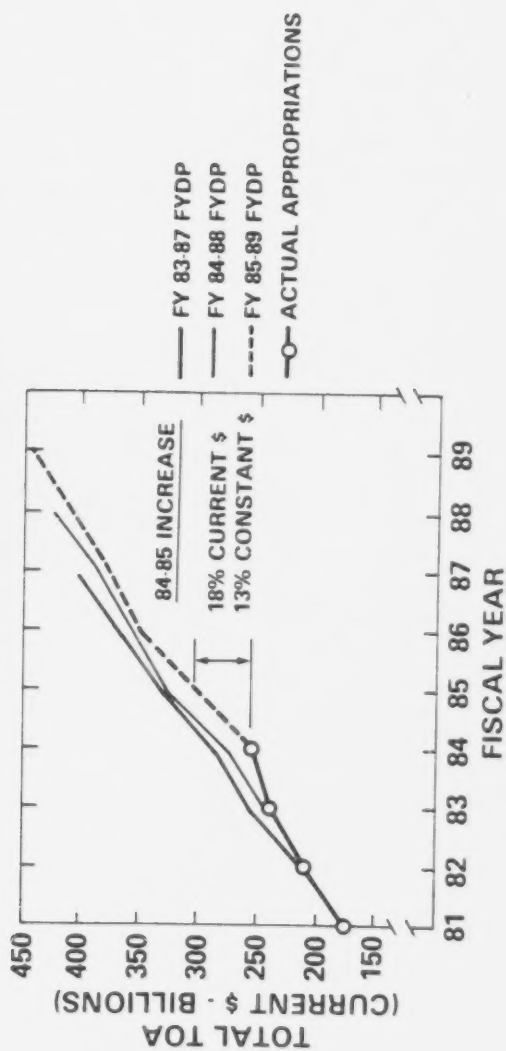
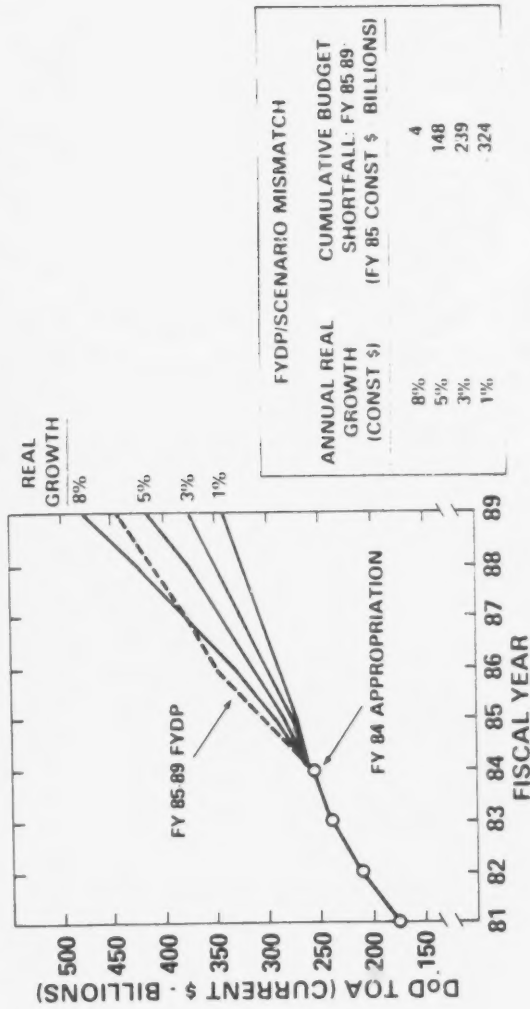


CHART 9

DoD BUDGET: ALTERNATIVE GROWTH SCENARIOS VERSUS THE FY 85-89 FYDP



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CHART 10

INTERIM CONCLUSION

ISSUE I: ARE PROJECTIONS OF FUTURE
BUDGET GROWTH OPTIMISTIC ?

SUMMARY OF OBSERVATIONS

1. FOR PAST SIX YEARS, THE DOD BUDGET GREW AT AN AVERAGE ANNUAL RATE OF 6.6% / YR (CONST \$)
2. FY 85-89 FYDP PROJECTS FIVE MORE YEARS OF LARGE INCREASES
3. APPROPRIATED BUDGETS HAVE BEEN LESS THAN PLANNED BUDGETS AND THIS MISMATCH SEEMS TO BE GETTING WORSE
4. THE FY 87-89 FYDP PROJECTIONS REQUIRE EVEN LARGER INCREASES OVER THE LONG-TERM - I.E. 8%/YR. FOR NEXT FIVE YEARS
5. CONTINUATION OF 6.6% PER YEAR GROWTH RATE IMPLIES A SHORTFALL OF 69B (85\$) OVER NEXT FIVE YEARS - IF GROWTH IS REDUCED TO 5%/YR, SHORTFALL GROWS TO \$148B

IMPLICATION

DEFENSE PLANS CONTINUE TO BE BASED ON OPTIMISTIC FUTURE
BUDGET PROJECTIONS

AND

THE POSSIBILITY OF LARGE BUDGET SHORTFALLS SUGGESTS THAT WE
SHOULD BE READY TO ADAPT TO AN UNFOLDING PLANS/REALITY
MISMATCH

CHART 11

II & III

ARE FUTURE OPERATING BUDGETS
UNDERESTIMATED ?

AND

IS THE BULK OF FUTURE BUDGET GROWTH
BEING ALLOCATED TO PROCUREMENT ?

CHART 12

ALLOCATION OF FUTURE BUDGET GROWTH

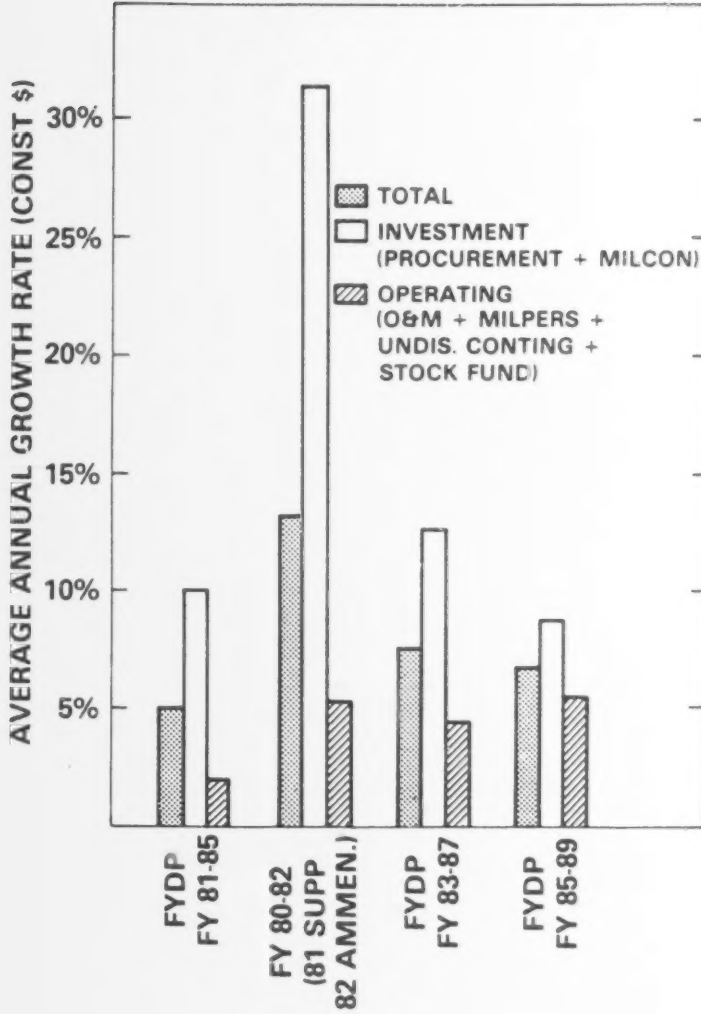


CHART 13

FY 85-89 FYDP **ALLOCATION OF FUTURE GROWTH**

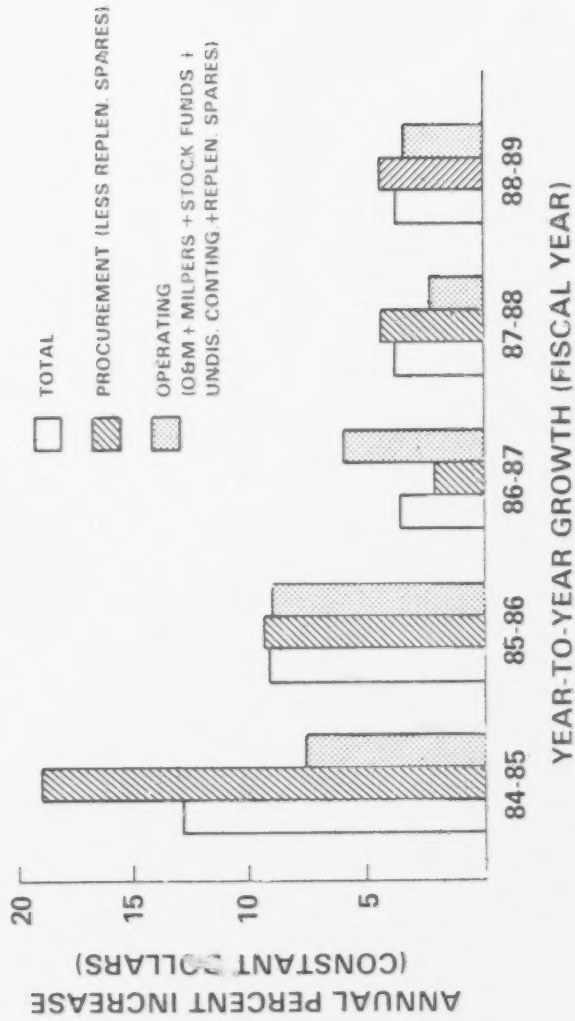


CHART 14

THE PROBLEM OF OPERATING COST GROWTH

OVER THE LONG-TERM, DoD'S FORCE HAS BEEN SHRINKING

— EG. BETWEEN 1957 AND 1984:

1. THE AF ACTIVE A/C INVENTORY SHRUNK BY 63%
2. THE NAVY ACTIVE SHIP INVENTORY SHRUNK BY 50%
3. ACTIVE DUTY ARMY MANPOWER SHRUNK BY 22%

HOWEVER

IN CONSTANT DOLLARS, THE 1984 OPERATING BUDGET IS 14% LARGER THAN
THE 1957 OPERATING BUDGET

BECAUSE

- GROWTH IN THE O&M BUDGET OVERWHELMED THE REDUCTIONS IN THE MILPERS BUDGET
 - IN CONST. DOLLARS, THE FY 84 O&M BUDGET IS 60% LARGER
THAN THE FY 57 BUDGET
 - IN CONST. DOLLARS, THE FY 84 MILPERS BUDGET IS 20% LESS
THAN THE 1957 BUDGET.

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CAUSES OF GROWTH IN OPERATING COSTS

EXTERNAL AND UNCONTROLLABLE FACTORS: EG. THE INCREASED PRICE OF OIL

- PLANS SHOULD ADAPT TO CHANGING EXTERNAL CONDITIONS

INTERNAL FACTORS: CONTROLLED BY POLICY DECISIONS, PLANS SHOULD REFLECT THE FUTURE CONSEQUENCES OF THESE DECISIONS.

- OPERATING COSTS ARE STRONGLY RELATED TO THE SIZE, OPERATING TEMPO AND TECHNICAL COMPLEXITY OF OUR FORCES.
 - INCREASING THE SIZE AND/OR OPERATING TEMPO INCREASES THE OPERATING BUDGET
 - INCREASING THE COMPLEXITY OF WEAPONS INCREASES THE COMPLEXITY OF THE SUPPORT TAIL, AND THEREBY INCREASES OPERATING COSTS

INCREASING COMPLEXITY INCREASES DEPENDENCE ON:

1. INTERMEDIATE AND DISTANT DEPOT MAINTENANCE LEVELS
2. COMPLEX TEST EQUIPMENT WHICH ALSO MUST BE MAINTAINED AND SUPPORTED
3. HIGH ie EXPENSIVE HUMAN SKILLS
4. HIGH COST SPARE PARTS WHICH REQUIRE A MORE PRECISELY REGULATED ie MORE EXPENSIVE INVENTORY CONTROL AND DISTRIBUTION SYSTEM
5. EXPENSIVE CONTRACT MAINTENANCE SUPPORT
6. ETC

INTERIM CONCLUSION

ISSUE II. DOES THE FYDP UNDERESTIMATE FUTURE OPERATING COSTS ?

KEY POINTS.

1. THE FYDP PROJECTS MODERATE INCREASES IN FORCE SIZE — EG. 600 SHIP NAVY
2. IT IS DOD POLICY TO INCREASE READINESS — WHICH IMPLIES INCREASED OPERATING TEMPOS TO SUPPORT INCREASED COMBAT TRAINING
3. THE FYDP MODERNIZATION PROGRAM IS ACCELERATING THE TREND TOWARDS MORE COMPLEX WEAPONS

IMPLICATION

A GROWING FORCE THAT IS MORE EXPENSIVE TO OPERATE AND IS PROJECTED TO OPERATE AT AN INCREASED TEMPO IMPLIES AN INCREASING RATE OF GROWTH IN THE OPERATING BUDGET OVER THE LONG TERM

HOWEVER

THE FYDP PROJECTS A DECREASING RATE OF GROWTH IN THE OPERATING BUDGET FOR THE NEXT FIVE YEARS

CONCLUSION

THE ASSUMPTION THAT WE CAN DECREASE THE RATE OF GROWTH IN THE OPERATING BUDGET WHILE INCREASING THE SIZE, COMPLEXITY, AND READINESS OF THE FORCE APPEARS OPTIMISTIC

— THIS IMPRESSION IS MAGNIFIED WHEN ONE RECALLS HOW OUR READINESS PROBLEMS DEVELOPED DURING THE 1970'S

CHART 17

**ISSUE III: IS THE BULK OF PREDICTED BUDGET
GROWTH BEING ALLOCATED TO
PROCUREMENT ?**

- THE PRECEDING SLIDES CONFIRM THE FACT THAT THE BULK OF OUT-YEAR BUDGET GROWTH CONTINUES TO BE ALLOCATED TO PROCUREMENT.

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INTERIM SUMMARY

OUR DISCUSSION SUGGESTS THAT CURRENT PLANS CONFORM TO THE HISTORICAL PATTERN, IN THAT:

1. OVERALL BUDGET PLANS ARE BASED ON OPTIMISTIC FUTURE GROWTH RATES
2. THERE IS REASON TO SUSPECT FUTURE OPERATING BUDGETS ARE UNDERESTIMATED
3. THE BULK OF ASSUMED FUTURE BUDGET GROWTH IS ALLOCATED TO PROCUREMENT

IMPLICATIONS

- THIS OPTIMISTIC PATTERN MAGNIFIES THE RISK OF FUTURE PROCUREMENT BUDGET REDUCTIONS BECAUSE PROCUREMENT WILL BE SQUEEZED
 - IF TOTAL BUDGET GROWTH DOES NOT MATERIALIZE
 - AND/OR
 - IF UNFOLDING OPERATING BUDGETS ARE HIGHER THAN PREDICTED
- TO BE REALISTIC, OUR PLANS SHOULD OFF-SET THIS MAGNIFIED RISK BY USING CONSERVATIVE PRICING ASSUMPTIONS IN OUR PROCUREMENT PLANS

CHART 19

IV

IS PROCUREMENT PLANNING BASED UPON OPTIMISTIC PRICING
ASSUMPTIONS ?

OR PUT ANOTHER WAY

ARE OUT-YEAR PROCUREMENT COSTS UNDERESTIMATED ?

THE DOD MODERNIZATION STRATEGY

- OUR MODERNIZATION STRATEGY IS BASED UPON THE INTERACTION OF TWO CRUCIAL ASSUMPTIONS:
 1. THE BOW WAVE ASSUMPTION -- I.E., THE PROCUREMENT BUDGET WILL GROW FASTER THAN THE DOD BUDGET AS A WHOLE
 - WE HAVE SEEN THAT THE BOW-WAVE IS FINANCED BY THE OPTIMISTIC ASSUMPTION THAT THE OPERATING BUDGET WILL GROW SLOWER THAN THE DOD BUDGET OVER THE LONG-TERM
 2. FUTURE UNIT COSTS WILL DECREASE
- THE INTERACTION OF HIGHER BUDGETS AND CHEAPER COSTS PERMIT PREDICTIONS OF FASTER MODERNIZATION IN THE FUTURE

IMPLICATION

SINCE FUTURE COST DECLINES DEPEND UPON THE EMERGENCE OF THE BOW-WAVE, ANY ASSESSMENT OF OUR PRICING ASSUMPTIONS NECESSARILY INCLUDES AN ASSESSMENT OF THE BOW-WAVE ASSUMPTION

CHART 21

DoD PROCUREMENT TOA: PLANS AND REALITY

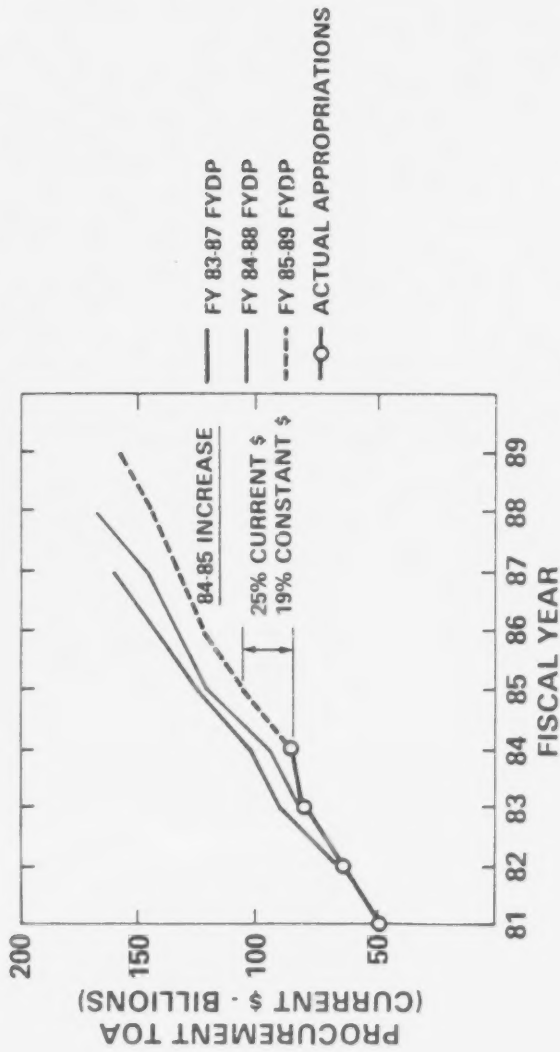
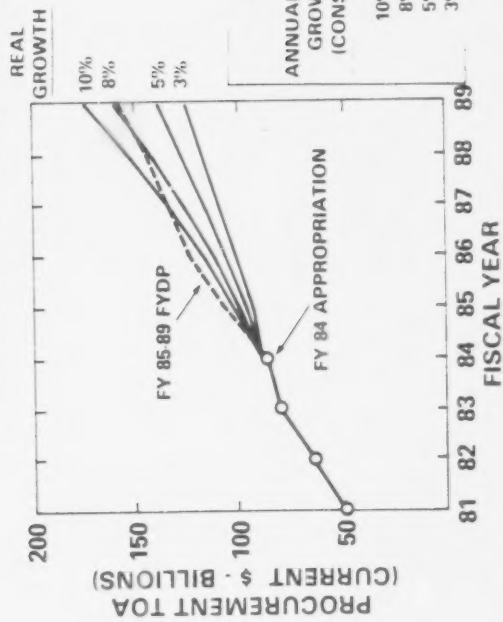


CHART 22

DoD PROCUREMENT: ALTERNATIVE GROWTH SCENARIOS VERSUS THE FY 85-89 FYDP



FYDP/SCENARIO MISMATCH		
ANNUAL REAL GROWTH (CONST \$)	CUMULATIVE BUDGET SHORTFALL: FY 85-89 (FY 85 CONST \$ BILLIONS)	
10%	+ 2 (EXCESS)	
8%	- 33	
5%	- 81	
3%	- 112	

BOW-WAVE (SUMMARY)

- RECENT EXPERIENCE INDICATES THE BOW WAVE IS NOT MATERIALIZING
- IN TERMS OF THE BUDGET GROWTH RATES REQUIRED TO GET BACK ON TRACK, THE PLANS/REALITY MISMATCH IS MORE SEVERE FOR THE BOW WAVE THAN IT IS FOR THE OVERALL BUDGET
- THE FYDP/SCENARIO MISMATCH INDICATES THAT EVEN FOR REASONABLY HIGH RATES OF GROWTH - E.G. 8% PER YEAR - SUBSTANTIAL BUDGET CUTS WOULD HAVE TO BE ABSORBED

IMPLICATION

- A REALISTIC PRICING STRATEGY SHOULD ACCOUNT FOR THE UNCERTAINTIES CAUSED BY THE UNFOLDING MISMATCH
- AN OPTIMISTIC PRICING STRATEGY WOULD CREATE PRESSURES THAT MAGNIFY THE UNFOLDING MISMATCH

- WITH THESE THOUGHTS IN MIND, WE WILL EXAMINE THE FY85-89 FYDP'S PREDICTIONS OF UNIT PROCUREMENT COSTS AND COMPARE THEM TO THE FY84-88 FYDP'S PREDICTIONS

CHART 24

PLANNED UNIT COSTS

- FY 85-89 FYDP GENERALLY PROJECTS DECLINING UNIT COSTS
- EXAMPLES FROM FY 85-89 FYDP:

	FY 85 UNIT PROC. COST (CONST. 85 \$ - MILLIONS)	FY 89 UNIT PROC. COST CONST. 85 \$ - MILLIONS	CONST. \$ CHG. %
AMRAAM	2.28	.27	-88%
F-15	42.62	25.75	-40%
M-2/3	1.45	1.09	-25%
BGM-109	3.0	1.50	-50%

CHART 25

FY85-89
PLANNED PROCUREMENT UNIT COST CHANGES
(CONST. \$)

% Chg	Service	Program	% Chg	Service	Program	% Chg	Service	Program
-88	J	AMRAAM	-33	N	AGC	-5%	A	M-108
-82	AF	KC-10	-32	AF	CBU-89	-5	N	100X
-81	AF	001-60	-32	AF	Laser Bomb Kit	-4	N	F-7C
-74	A	Patriot	-29	A	01WAD	-3	A	FAAV
-71	AF	T-46	-29	N	UCAC	0	A	M-1
-71	A	Chaparral	-27	A	AG-64	N/A	AF	C-17
-62	AF	Buysse	-25	A	M-273	N/A	A	BE-12
-59	N	C-2	-24	J	Helix	N/A	A	AG-66
-56	A	Bushmaster	-21	AF	GM-15	N/A	N	T-38
-52	AF	C-5	-21	A	104	N/A	N	AG-60
-50	N	BGM-109	-21	J	AGM-7	N/A	N	100 (Conv.)
-49	AF	B-1	-20	A	6505	N/A	N	TAGM
-49	N	AV-8B	-18	A	Personnel	+2	A	M-109
-43	N	CH-53	-18	N	M-30	+2	A	M-83
-43	N	Trid, 11 Msl.	-18	N	LPD-4 SLEP	+3	N	0-17
-43	J	AGM-650	-17	N	M51-1	+3	AF	3000 AP1
-45	AF	M-X	-16	N	CV SEP	+6	AF	3000 Ht 1
-44	N	F-18	-15	N	P-3	+8	N	EA-6
-44	N	AIM-54	-14	N	550-600	+10	N	M-15
-43	N	049, 1, M, Torp.	-14	A	EH-60	+21	N	M-75
-42	N	00G-51	-13	N	Trid, 550N	+22	A	M-52
-41	N	50-60B	-12	N	UHD-1	+22	N	AGM-84
-40	AF	F-15	-11	A	00-60	+24	N	MCM
-40	AF	MC-130H	-11	N	TAGDS	+33	AF	Airtel, Alt, Min.
-39	AF	CBU-87	-10	N	AG-1	+42	J	AIM-9
-39	A	51 Imper	-9	N	USD-41	+54	N	F-14
-38	AF	F-16	-8	N	51d, Msl.	+59	N	M-48
-38	J	AGM-88	-7	N	TAG	+60	AF	TB-1
-35	N	AF	-6	N	CG-07	+74	N	M-46
-33	N	LCX	-6	N	BB React.	+74	N	

FY85-89 FYDP: PLANNED UNIT COST CHANGES

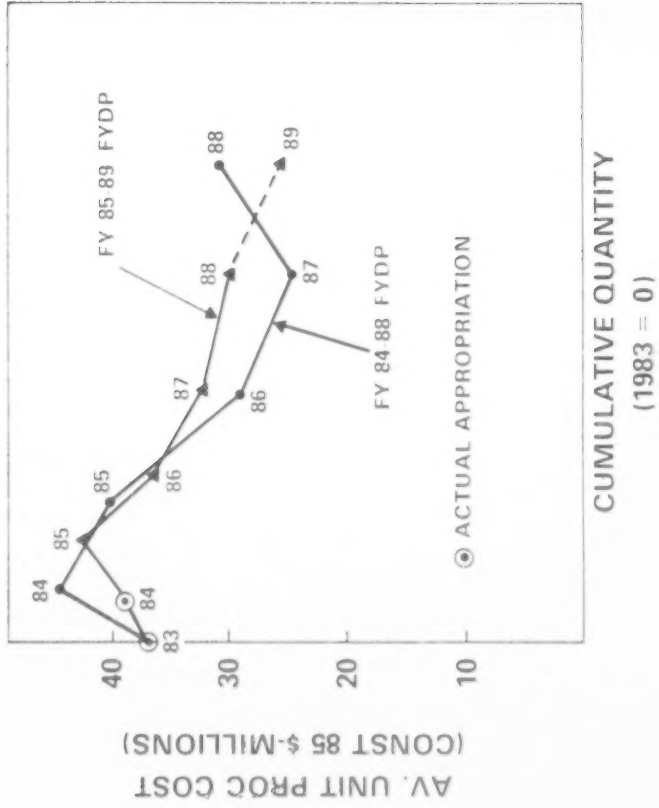
PROCUREMENT UNIT COST CHANGE (% CHG. - CONST. \$)	NUMBER OF PROCUREMENT PROGRAMS	FY85-89 PROGRAM COST (CONST. 85 \$ - BILLIONS)
GREATER THAN 45% REDUCTION	17 (19%)	62.7 (27%)
20%-44% REDUCTION	25 (28%)	88.2 (38%)
1%-19% REDUCTION	22 (25%)	56.4 (24%)
NO CHANGE	1 (1%)	8.5 (4%)
N/A	7 (8%)	3.9 (2%)
1%-224% INCREASE	17 (19%)	13.6 (6%)
	89 (100%)	233.3 (100%)

* ADDS TO 101 BECAUSE OF ROUNDING

2/82 4

CHART 27

F-15 PROCUREMENT PLANS FY 84 FYDP VS FY 85 FYDP



FY85-89 FYDP VERSUS FY84-88 FYDP:

**A COMPARISON OF CHANGES OVER THE FOUR COMMON FUTURE YEARS
(i.e. FY85-88)**

RANGE OF CHANGE	QUANTITY CHANGES		AV. UNIT COST CHANGES	
	# OF PROGRAMS	85-89 COST (B)	# OF PROGRAMS	85-89 COST (B)
SIGNIFICANT DECREASE (GREATER THAN 11%)	33	80.3	17	48.6
MODERATE DECREASE (3%, 10%)	5	12.8	20	66.1
INSIGNIFICANT CHANGE (- 2% TO + 2%)	35	104.1	22	48.6
MODERATE INCREASE (3%, 10%)	4	7.6	14	35.7
SIGNIFICANT INCREASE (GREATER THAN 11%)	12	28.9	16	34.7
TOTAL	89	233.7	89	233.7

CHART 29

FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES^{1/}

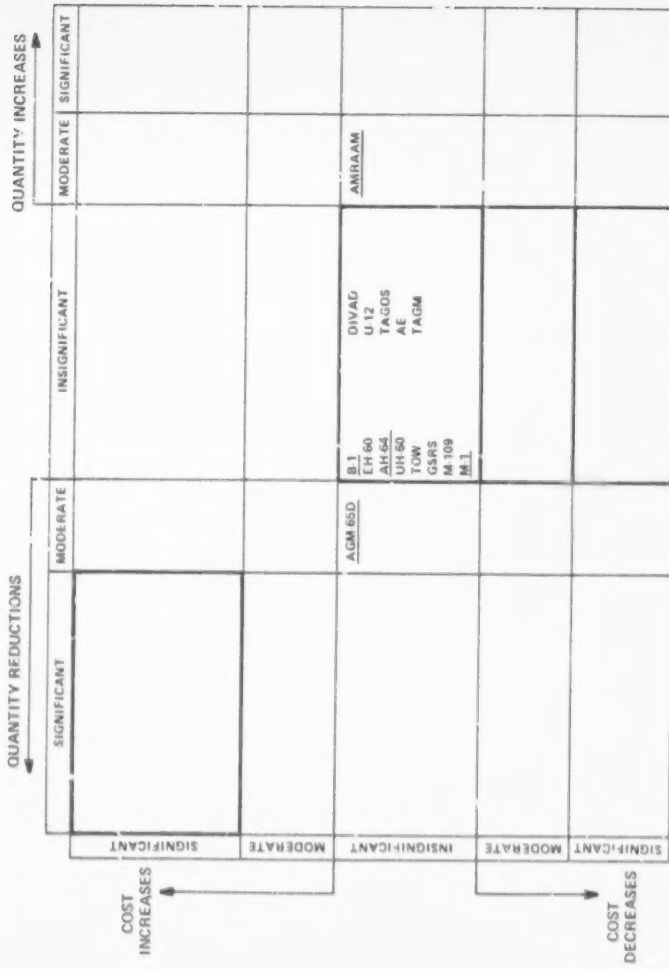

^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 30

FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES^{1/}

QUANTITY REDUCTIONS		QUANTITY INCREASES	
SIGNIFICANT	MODERATE	INSIGNIFICANT	SIGNIFICANT
C-15 C-17 HH-60 TR-1 LASER BOMB KIT CBU-89 CHAPARRAL M-27 BUSHMASTER T-48 F-14 F-18 A-10	AGE SGM-109 ADV LW TORP MK-60		
SIGNIFICANT	MODERATE	INSIGNIFICANT	SIGNIFICANT
T-48 F-14 F-18 A-10	M-88 LCAC		
INSIGNIFICANT			
MODERATE			
SIGNIFICANT			

COST
INCREASESCOST
DECREASES^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 31

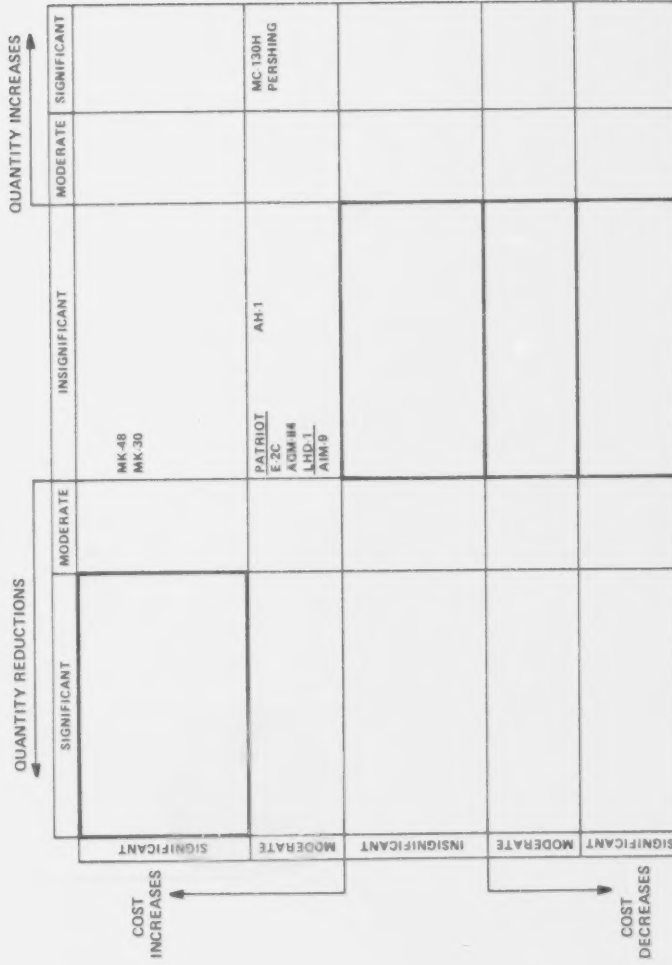
FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES^{1/}

QUANTITY REDUCTIONS		QUANTITY INCREASES	
↓	↑	↓	↑
SIGNIFICANT	MODERATE	INSIGNIFICANT	SIGNIFICANT
LOST INCREASES SIGNIFICANT MODERATE INSIGNIFICANT	FAASV M 252 AV 88 LPD-4 SLEP 30MM API AIRFLD. ATT WPN BIGEYE M 196 KC 10 30MM HEI ECK MK 48 LSD-41	STINGER STD. MSL C-5 CH 53 TRID II MSL MK 15 IRID SSBN TAK (CONV) BB REACT. CV SLEP M X EA 6 SH 608 CG 47 DDG 51 MSH 1	SIGNIFICANT MODERATE INSIGNIFICANT SIGNIFICANT
COST DECREASES SIGNIFICANT MODERATE INSIGNIFICANT	TAO		

^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 32

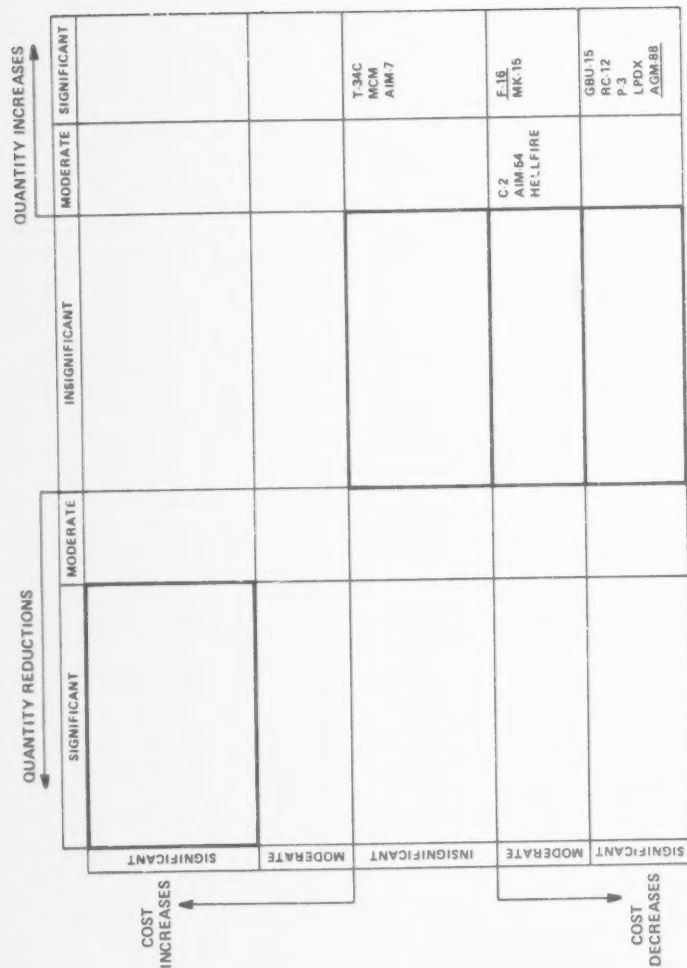
**FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION
OF COST/QUANTITY CHANGES^{1/}**



^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 33

**FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION
OF COST/QUANTITY CHANGES^{1/}**



^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

2732-4

CHART 34

FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION
OF COST/QUANTITY CHANGES^{1/}

QUANTITY REDUCTIONS		QUANTITY INCREASES	
COST INCREASES	COST DECREASES	INSIGNIFICANT	SIGNIFICANT
SIGNIFICANT F 15 C 17 HH 60 TR 1 LASER BOMB KIT CBU 89 CBU 87 CHAPARRAL M 27/3 BUSHMASTER MODERATE T 48 F 14 F 16 AOE	SIGNIFICANT A 6E BGM 109 ADV LW TORP MK 60	MODERATE M 88 LCAC	MODERATE MK 48 MK 30 INSIGNIFICANT AH 1 SIGNIFICANT PATRIOT E 2C AGM 84 LHD 1 AIM 9 MC 130H PERSHING
INSIGNIFICANT FAASV M 252 AV 8B LPD 4 SLEP		AGM 85D	AMRAAM DIVAD U 12 TAGOS AE TAGM T 34C MCN AIM 7
MODERATE 30MM API AIRFLD ATT WPN. BIGEYE M 106	SSN 688	STINGER STD. MSL	C 2 AIM 54 HELLFIRE TRID SSBN TAK (CONV) BB REACT. CV SLEP F 16 MK 15
SIGNIFICANT KC 10 30MM HEI ECX MK 46 LSD 41	TAO		GBU 15 RC 12 P 3 LPDX AGM 88

^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 35

EXCURSION

The following five charts depict the evolution of cost/quantity changes over the last year:

- ³⁶ Slide 6: The baseline against which changes are measured is the FY84-88 FYDP, Jan. 1983. The changes will be measured by the departure from the "striped box".
- ³⁷ Slide 6: 3½ months after publication of the FY84 FYDP, the 1st draft of the FY85 FYDP (i.e., the FY85 POM, May 1983) made the cost/quantity changes described in this slide.
- ³⁸ Slide 6: Between May 1983 and Jan. 1984, the decision process made further changes in the cost/quantity predictions. The programs which were changed are encircled on this slide.
- ³⁹ Slide 6: This slide depicts the pattern of these changes from the POM position.
- ⁴⁰ Slide 6: This slide depicts the net result of the year's movements.

CHART 37

FY 85-89 POM VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES ^{1/}

QUANTITY REDUCTIONS		QUANTITY INCREASES	
SIGNIFICANT	MODERATE	INSIGNIFICANT	SIGNIFICANT
C 17 C 130 MOB PROT GUN SYS MK 80 CHAPARRAL STINGER BUSHMASTER LASER BOMB KIT ADV LW TORP F 15 A			E 2C
F 14 F 16 AOE GRU 15 AIRFIELD ATT WPN B	M 2 T 48 F 16 SSN 600 P 3 LPD 4	LAV 26 LAV 15 AC LHD 1 AIM 9 GLCM LAC TACM AIM 9	AIM 7
TR 1 AV 80 BIGEYE FLD ARTY AMMON SUPT VEH	M 60	GSRS C 2 TAGOS M 100 ECK MK 16 DIVAD TRND H MCM UH 60 M 100 TAK (CONVI) PERSHING U 12 BOREACT C	HELLFIRE
HH 60 MK 46 LSD 41		C 5 TRID SSBN TOW AGM 86D AH 1 CV SLP MK 75 D	AIM 64 F 16 AH 64 E
E 3 KC 10 TAO		M X C 9 MSH 1 VTX	AGM 86 RC 12 EA 6 SH 600 LPDA

COST INCREASES

COST DECREASES

1/ COMPARISON OVER FOUR COMMON YEARS 1 E FY 85 86 87 88

1729 4

CHART 38

FY 85-89 POM VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES ^{1/}

QUANTITY REDUCTIONS			QUANTITY INCREASES		
SIGNIFICANT	MODERATE	INSIGNIFICANT	MODERATE	SIGNIFICANT	
C 17 MOB PROT GUN M 72 CBU STINGER BLUHMMASTER ADV LW TORP F 15 A					
F 14 A-10 F 16 F 18 F 19 F 20 F 21 F 22 F 23 F 24 F 25 F 26 F 27 F 28 F 29 F 30 F 31 F 32 F 33 F 34 F 35 F 36 F 37 F 38 F 39 F 40 F 41 F 42 F 43 F 44 F 45 F 46 F 47 F 48 F 49 F 50 F 51 F 52 F 53 F 54 F 55 F 56 F 57 F 58 F 59 F 60 F 61 F 62 F 63 F 64 F 65 F 66 F 67 F 68 F 69 F 70 F 71 F 72 F 73 F 74 F 75 F 76 F 77 F 78 F 79 F 80 F 81 F 82 F 83 F 84 F 85 F 86 F 87 F 88 F 89 F 90 F 91 F 92 F 93 F 94 F 95 F 96 F 97 F 98 F 99 F 100 F 101 F 102 F 103 F 104 F 105 F 106 F 107 F 108 F 109 F 110 F 111 F 112 F 113 F 114 F 115 F 116 F 117 F 118 F 119 F 120 F 121 F 122 F 123 F 124 F 125 F 126 F 127 F 128 F 129 F 130 F 131 F 132 F 133 F 134 F 135 F 136 F 137 F 138 F 139 F 140 F 141 F 142 F 143 F 144 F 145 F 146 F 147 F 148 F 149 F 150 F 151 F 152 F 153 F 154 F 155 F 156 F 157 F 158 F 159 F 160 F 161 F 162 F 163 F 164 F 165 F 166 F 167 F 168 F 169 F 170 F 171 F 172 F 173 F 174 F 175 F 176 F 177 F 178 F 179 F 180 F 181 F 182 F 183 F 184 F 185 F 186 F 187 F 188 F 189 F 190 F 191 F 192 F 193 F 194 F 195 F 196 F 197 F 198 F 199 F 200 F 201 F 202 F 203 F 204 F 205 F 206 F 207 F 208 F 209 F 210 F 211 F 212 F 213 F 214 F 215 F 216 F 217 F 218 F 219 F 220 F 221 F 222 F 223 F 224 F 225 F 226 F 227 F 228 F 229 F 230 F 231 F 232 F 233 F 234 F 235 F 236 F 237 F 238 F 239 F 240 F 241 F 242 F 243 F 244 F 245 F 246 F 247 F 248 F 249 F 250 F 251 F 252 F 253 F 254 F 255 F 256 F 257 F 258 F 259 F 260 F 261 F 262 F 263 F 264 F 265 F 266 F 267 F 268 F 269 F 270 F 271 F 272 F 273 F 274 F 275 F 276 F 277 F 278 F 279 F 280 F 281 F 282 F 283 F 284 F 285 F 286 F 287 F 288 F 289 F 290 F 291 F 292 F 293 F 294 F 295 F 296 F 297 F 298 F 299 F 300 F 301 F 302 F 303 F 304 F 305 F 306 F 307 F 308 F 309 F 310 F 311 F 312 F 313 F 314 F 315 F 316 F 317 F 318 F 319 F 320 F 321 F 322 F 323 F 324 F 325 F 326 F 327 F 328 F 329 F 330 F 331 F 332 F 333 F 334 F 335 F 336 F 337 F 338 F 339 F 340 F 341 F 342 F 343 F 344 F 345 F 346 F 347 F 348 F 349 F 350 F 351 F 352 F 353 F 354 F 355 F 356 F 357 F 358 F 359 F 360 F 361 F 362 F 363 F 364 F 365 F 366 F 367 F 368 F 369 F 370 F 371 F 372 F 373 F 374 F 375 F 376 F 377 F 378 F 379 F 380 F 381 F 382 F 383 F 384 F 385 F 386 F 387 F 388 F 389 F 390 F 391 F 392 F 393 F 394 F 395 F 396 F 397 F 398 F 399 F 400 F 401 F 402 F 403 F 404 F 405 F 406 F 407 F 408 F 409 F 410 F 411 F 412 F 413 F 414 F 415 F 416 F 417 F 418 F 419 F 420 F 421 F 422 F 423 F 424 F 425 F 426 F 427 F 428 F 429 F 430 F 431 F 432 F 433 F 434 F 435 F 436 F 437 F 438 F 439 F 440 F 441 F 442 F 443 F 444 F 445 F 446 F 447 F 448 F 449 F 450 F 451 F 452 F 453 F 454 F 455 F 456 F 457 F 458 F 459 F 460 F 461 F 462 F 463 F 464 F 465 F 466 F 467 F 468 F 469 F 470 F 471 F 472 F 473 F 474 F 475 F 476 F 477 F 478 F 479 F 480 F 481 F 482 F 483 F 484 F 485 F 486 F 487 F 488 F 489 F 490 F 491 F 492 F 493 F 494 F 495 F 496 F 497 F 498 F 499 F 500 F 501 F 502 F 503 F 504 F 505 F 506 F 507 F 508 F 509 F 510 F 511 F 512 F 513 F 514 F 515 F 516 F 517 F 518 F 519 F 520 F 521 F 522 F 523 F 524 F 525 F 526 F 527 F 528 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695 F 696 F 697 F 698 F 699 F 700 F 701 F 702 F 703 F 704 F 705 F 706 F 707 F 708 F 709 F 710 F 711 F 712 F 713 F 714 F 715 F 716 F 717 F 718 F 719 F 720 F 721 F 722 F 723 F 724 F 725 F 726 F 727 F 728 F 729 F 730 F 731 F 732 F 733 F 734 F 735 F 736 F 737 F 738 F 739 F 740 F 741 F 742 F 743 F 744 F 745 F 746 F 747 F 748 F 749 F 750 F 751 F 752 F 753 F 754 F 755 F 756 F 757 F 758 F 759 F 760 F 761 F 762 F 763 F 764 F 765 F 766 F 767 F 768 F 769 F 770 F 771 F 772 F 773 F 774 F 775 F 776 F 777 F 778 F 779 F 780 F 781 F 782 F 783 F 784 F 785 F 786 F 787 F 788 F 789 F 790 F 791 F 792 F 793 F 794 F 795 F 796 F 797 F 798 F 799 F 800 F 801 F 802 F 803 F 804 F 805 F 806 F 807 F 808 F 809 F 810 F 811 F 812 F 813 F 814 F 815 F 816 F 817 F 818 F 819 F 820 F 821 F 822 F 823 F 824 F 825 F 826 F 827 F 828 F 829 F 830 F 831 F 832 F 833 F 834 F 835 F 836 F 837 F 838 F 839 F 840 F 841 F 842 F 843 F 844 F 845 F 846 F 847 F 848 F 849 F 850 F 851 F 852 F 853 F 854 F 855 F 856 F 857 F 858 F 859 F 860 F 861 F 862 F 863 F 864 F 865 F 866 F 867 F 868 F 869 F 870 F 871 F 872 F 873 F 874 F 875 F 876 F 877 F 878 F 879 F 880 F 881 F 882 F 883 F 884 F 885 F 886 F 887 F 888 F 889 F 890 F 891 F 892 F 893 F 894 F 895 F 896 F 897 F 898 F 899 F 900 F 901 F 902 F 903 F 904 F 905 F 906 F 907 F 908 F 909 F 910 F 911 F 912 F 913 F 914 F 915 F 916 F 917 F 918 F 919 F 920 F 921 F 922 F 923 F 924 F 925 F 926 F 927 F 928 F 929 F 930 F 931 F 932 F 933 F 934 F 935 F 936 F 937 F 938 F 939 F 940 F 941 F 942 F 943 F 944 F 945 F 946 F 947 F 948 F 949 F 950 F 951 F 952 F 953 F 954 F 955 F 956 F 957 F 958 F 959 F 960 F 961 F 962 F 963 F 964 F 965 F 966 F 967 F 968 F 969 F 970 F 971 F 972 F 973 F 974 F 975 F 976 F 977 F 978 F 979 F 980 F 981 F 982 F 983 F 984 F 985 F 986 F 987 F 988 F 989 F 990 F 991 F 992 F 993 F 994 F 995 F 996 F 997 F 998 F 999 F 1000					
E 3 RC 10 TAO					

1/ COMPARISON OVER FOUR COMMON YEARS 1E FY 85 86 87 88

1779-4

CHART 39

FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES ^{1/}

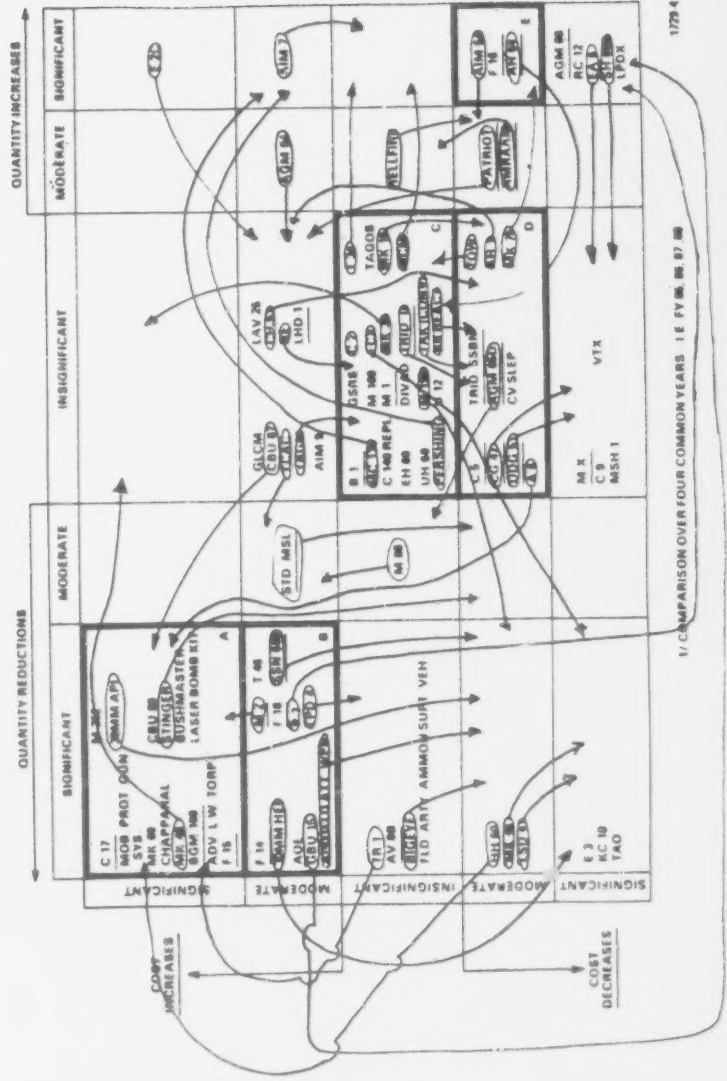


CHART 40

FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION OF COST/QUANTITY CHANGES^{1/}

QUANTITY REDUCTIONS		QUANTITY INCREASES	
SIGNIFICANT	MODERATE	INSIGNIFICANT	SIGNIFICANT
COST INCREASES F-15 C-17 HH-60 TR-1 LASER BOMB KIT CBU-89 CBU-87 CHAPARRAL M-23 BUSHMASTER T-46 F-16 F-18 AOE	A-8E BGM-109 ADV. LW. TORP MK-50 MK-48 MK-30 M-88 LCAC	AH-1 PATRIOT E-2C AGM-84 LHD-1 AIM-9	MC-130H PERSHING T-34C MCM AIM-7 F-16 MK-15 GRU-15 RC-12 P-3 LPDX AGM-88
FAASV M-252 AV-8B LPD-4 SLEP	AGM-65D	DIVAD U-12 TAGOS AE TAGM B-1 EH-66 AH-64 UH-60 TOW GSRs M-109 M-1	T-34C MCM AIM-7
30MM API AIRFLD. ATT. WPG. BIGEYE M-198	SSN-688 STINGER STD. MSL	C-5 CH-53 TRID. II MSL MK-15 THID. SSBN TAK (CONV.) BB REACT. CV SLEP	F-16 MK-15 C-2 AIM-54 HELLFIRE
KC-10 30MM HEI ECK MK-48 LSD-41	TAO	M-X EA-6 SH-60B CG-47 DDG-51 MSH-1	GRU-15 RC-12 P-3 LPDX AGM-88
COST DECREASES			

^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 41

**FY 85-89 FYDP VERSUS FY 84-88 FYDP: DISTRIBUTION
OF COST/QUANTITY CHANGES^{1/}**

QUANTITY REDUCTIONS		QUANTITY INCREASES	
SIGNIFICANT	MODERATE	INSIGNIFICANT	MODERATE
14 (15.7%) 33.75 (14.4%)		2 (2.2%) 95 (4%)	
4 (4.5%) 20.61 (8.8%)	2 (2.2%) 1.85 (.8%)	6 (6.7%) 11.76 (5%)	2 (2.2%) 1.51 (.6%)
4 (4.5%) 6.38 (2.7%)	1 (1.1%) 3.41 (1.5%)	13 (14.6%) 33.07 (14.1%)	1 (1.1%) 3.81 (1.6%)
5 (5.6%) 12.87 (5.5%)	2 (2.2%) 7.58 (3.2%)	8 (9%) 23.59 (10.1%)	3 (3.4%) 3.8 (1.6%)
6 (6.7%) 8.74 (2.9%)		6 (6.7%) 34.72 (14.9%)	5 (5.6%) 7.17 (3.1%)
SIGNIFICANT	MODERATE	INSIGNIFICANT	MODERATE

COST
INCREASESCOST
DECREASES^{1/}COMPARISON OVER FOUR COMMON YEARS - I.E. FY 85, 86, 87, 88

CHART 42

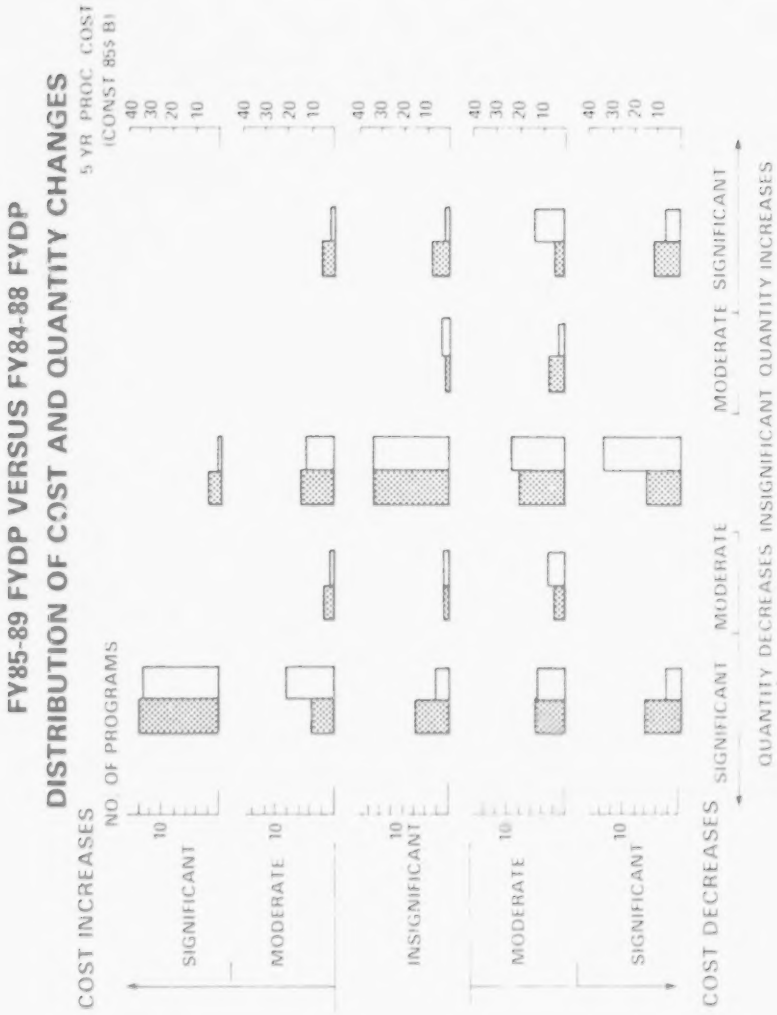


CHART 43

PROGRAMS WHICH APPEAR RE-PRICED TO LOWER COSTS

NAVY					AIRFORCE					ARMY				
PROGRAM	5 YR COST \$B S B L	QTY CHG	AV UNIT COST CHG %	%	PROGRAM	5 YR COST \$B S B L	QTY CHG	AV UNIT COST CHG %	%	PROGRAM	5 YR COST \$B S B L	QTY CHG	AV UNIT COST CHG %	%
EA-6	1.58	0	19		KC-10	1.27	30	14		STINGER	1.88	0	4	
AV-8B	4.45	24	0		C-5	6.13	0	3		FAASU	.86	19	3	
CH-53	1.32	2	-8		MX	10.38	+2	23		M108	14	52	8	
SH-60B	1.60	0	-23		30 MM H&I	.07	62	19		M252	.11	20	12	
EC-8	1.33	18	34		30 MM API	.24	12	8						
THUD II MSL	8.25	0	3		AIRFIELD ATT W/N	.54	23	7						
STD MSL	5.70	7	3		BIG EYE	.56	20	9						
MR-46	.80	30	-17											
MR-15	.37	+2	9											
TRUD SSBN	7.02	0	9											
TAN CONV	.06	0	0											
SSN 688	11.39	11	-4											
BB H&ACT	.84	0	-4											
CV SLEP	1.58	0	4											
CG-47	11.25	0	12											
DDG-51	9.24	0	11											
LSD-41	1.31	25	28											
LPO-4 SLEP	1.38	-43	2											
MSH-1	.66	0	23											
TAO	2.16	2	15											
20	70.1													

**SUMMARY OF MAJOR
COST/QUANTITY CHANGES**

IN RESPONSE TO THE UNFOLDING BUDGET
SQUEEZE, THE 85-89 FYDP ADJUSTED OUR
EXPECTATIONS AND DESIRES BY:

1. REDUCING FIVE-YEAR PROGRAM COSTS

- REDUCING FUTURE QUANTITIES AND ACCEPTING INCREASES IN
AVERAGE UNIT COSTS
 - AFFECTING 22% OF SAMPLE AND 24% OF SAMPLE COST
- RE PRICING PROGRAMS TO LOWER FUTURE COSTS
 - AFFECTING 35% OF SAMPLE AND 39% OF SAMPLE COST

2. USING SOME OF THE "SAVINGS FROM "1" TO:

- INCREASE FUTURE PRODUCTION OF A FEW PROGRAMS
(MAINLY THE F-16)
 - AFFECTING 16% OF SAMPLE AND 15% OF SAMPLE COST
- RE-PRICE A FEW PROGRAMS TO HIGHER FUTURE COSTS
 - AFFECTING 11% OF SAMPLE AND 6% OF SAMPLE COST

CHART 45

INTERIM CONCLUSION

ISSUE IV. IS PROCUREMENT PLANNING BASED ON
OPTIMISTIC PRICING ASSUMPTIONS ?

SUMMARY OF KEY POINTS

- PREDICTIONS OF DECLINING FUTURE COSTS DOMINATE PROCUREMENT PLANNING IN A PATTERN THAT MAGNIFIES FINANCIAL RISK
 - THE LARGEST DECLINES TEND TO BE CONCENTRATED IN LARGE PROGRAMS OR IN NEW PROGRAMS WITH LITTLE PRODUCTION EXPERIENCE
- THESE DECLINING COST PREDICTIONS DEPEND UPON THE BOW WAVE HOWEVER, THE BOW WAVE IS NOT MATERIALIZING
 - THE UNFOLDING PLANS/REALITY MISMATCH IS WORSE FOR THE BOW WAVE THAN FOR THE BUDGET AS A WHOLE
- THE FYDP ADAPTED TO THIS INCREASING BUDGET SQUEEZE BY STRETCHING OR TRUNCATING SOME PROGRAMS AND REPRICING OTHERS TO LOWER FUTURE COSTS

CONCLUSIONS

- THE POM PRICING STRATEGY IS AN OPTIMISTIC HIGH RISK STRATEGY
 - THE BOW WAVE IS NOT MATERIALIZING
 - PROCUREMENT STRETCH OUTS ARE SHORT SIGHTED ADJUSTMENTS THAT INCREASE COSTS
 - RE PRICING TO LOWER COSTS IS A SHORT SIGHTED ADJUSTMENT THAT MAGNIFIES OPTIMISM
- GIVEN THE UNFOLDING CIRCUMSTANCES, A MORE CONSERVATIVE PRICING STRATEGY SEEMS MORE APPROPRIATE
 - PARTICULARLY IF WE ARE UNWILLING TO CANCEL PROGRAMS

CHART 46

V & VI

- HAS CONGRESS OR DOD CANCELLED MAJOR PROGRAMS IN RESPONSE TO UNFOLDING BUDGET CONSTRAINTS ?

AND

- DOES THE TENDENCY TO ADD "NEW STARTS" CONTINUE WHEN PLANNED BUDGET GROWTH IS INCREASED ?

CHART 47

Major Program "New Start"/Cancellations¹

	New Starts (Yr. of Start)		Cancellations (Yr. of Cancellation)	
	83-87 FYDP	84-89 FYDP	83-87 FYDP	84-89 FYDP
<u>Navy</u>				
AV-8B	83			
SH-60 CV Variant	85			
EC-X	85			
Trid. II Msl.	85			
CVN	83	88		
DD-963	86			88
CGN-42	87			87
LHD-1	84			
LPDX	87			
LPD-4 SLEP		84		
LCAC		84		
FFG-7	85			85
AE	85			
ADE				
<u>Army</u>				
-				
<u>Air Force</u>				
B-1	83			
Tac. Ftr. Deriv.		84		
C-5	83			
C-17		87		
T-46	86			
E-3				
WRASM				
CBU-89	83			
CBU-87	83			
CBU-90	83			
SKET				
		86		83
				85
				86

¹Major program is defined to have a FYDP five year cost greater than \$1.3B (85\$)--i.e., the median sample cost.

CHART 48

V & VI INTERIM CONCLUSION

ISSUE V: HAS CONGRESS OR DOD CANCELLED MAJOR PROGRAMS IN RESPONSE TO UNFOLDING BUDGET CONSTRAINTS ?

• NO

ISSUE VI: DOES THE TENDENCY TO ADD "NEW STARTS" CONTINUE WHEN PLANNED BUDGET GROWTH IS INCREASED ?

- SEVERAL PROGRAMS WITH VERY LARGE LONG TERM FINANCIAL CONSEQUENCES WERE STARTED UP TO THE LAST TIME OUT YEAR BUDGET GROWTH WAS INCREASED I.E. IN THE FY83-87 FYDP
- MOREOVER, THERE ARE R&D PLANS TO INITIATE SEVERAL ADDITIONS MAJOR NEW PROGRAMS: E.G.
 (1) A SUCCESSOR TO THE SRAM, (2) MIDGETMAN ICBM, (3) A SPACE BASED BALLISTIC MISSILE DEFENSE SYSTEM, (4) A NEW LIGHT HELICOPTER FOR THE ARMY, (5) THE FAMILY OF EMERGING TECHNOLOGY SYSTEMS FOR THE CONVENTIONAL DEFENSE OF EUROPE AND (6) AN ADVANCED TACTICAL FIGHTER FOR THE AIR FORCE
- OUR ACTIONS TO DATE SUGGEST THAT OUR TENDENCY TO ADD "NEW STARTS" CONTINUES UNABATED

2/12/4

CHART 49

WRAP-UP

OUR PLANS ARE STILL PLAGUED BY THE FOLLOWING STRUCTURAL DISHARMONIES:

- PROJECTIONS OF LONG TERM DOD BUDGET GROWTH ARE OPTIMISTIC
- PROJECTED GROWTH IN THE OPERATING BUDGET IS BEING (UNREALISTICALLY) HELD DOWN IN ORDER TO PUMP HIGHER GROWTH INTO THE PROCUREMENT BUDGET
- MODERNIZATION PLANS ARE PREDICATED ON THE INTERACTION OF TWO HIGH RISK (UNREALISTIC) ASSUMPTIONS - I.E., THAT THE BOW WAVE WILL MATERIALIZE AND THAT FUTURE COSTS WILL DECLINE SIGNIFICANTLY
- CONGRESS AND DOD HAVE NOT CANCELLED MAJOR PROGRAMS IN RESPONSE TO THE UNFOLDING BUDGET SQUEEZE
- OUR TENDENCY TO ADD "NEW STARTS" CONTINUES UNABATED

IMPLICATION

THESE STRUCTURAL DISHARMONIES REINFORCE EACH OTHER AND THEREBY MAGNIFY THE UNFOLDING PLANS/REALITY MISMATCH

RESULT

WE ARE UNDER CONTINUAL PRESSURE TO REDUCE READINESS, SLOW RATES OF MODERNIZATION, AND ULTIMATELY SHRINK THE FORCE SIZE - EVEN WHEN THE BUDGET IS INCREASING

2732 4

CHART 50

FORCE TRENDS (NORMALIZED TO 1957 INVENTORIES)

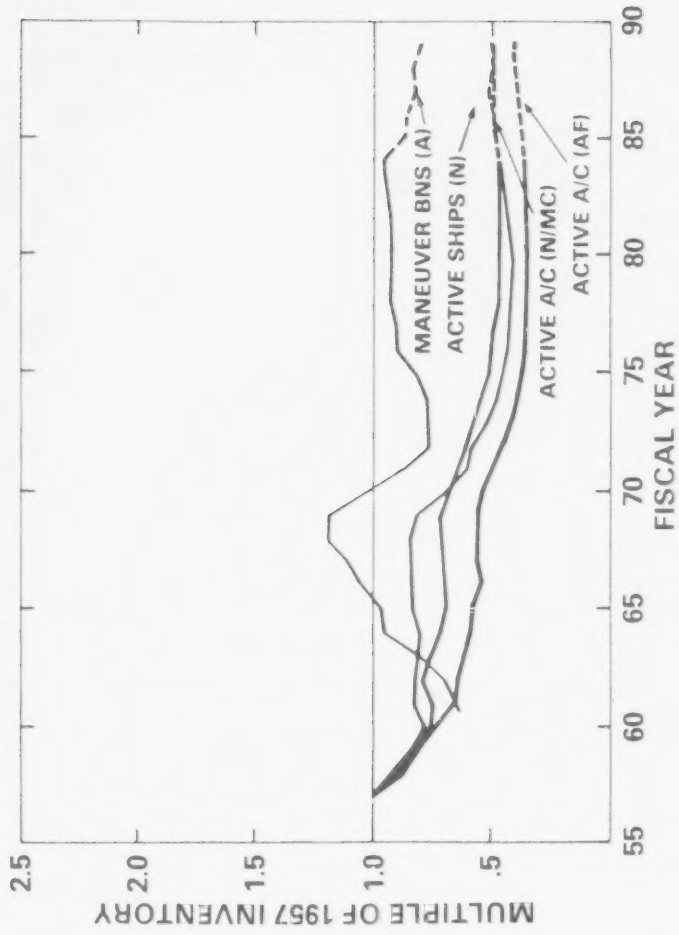


CHART 51

BUDGET TRENDS (NORMALIZED TO 1957 LEVELS)

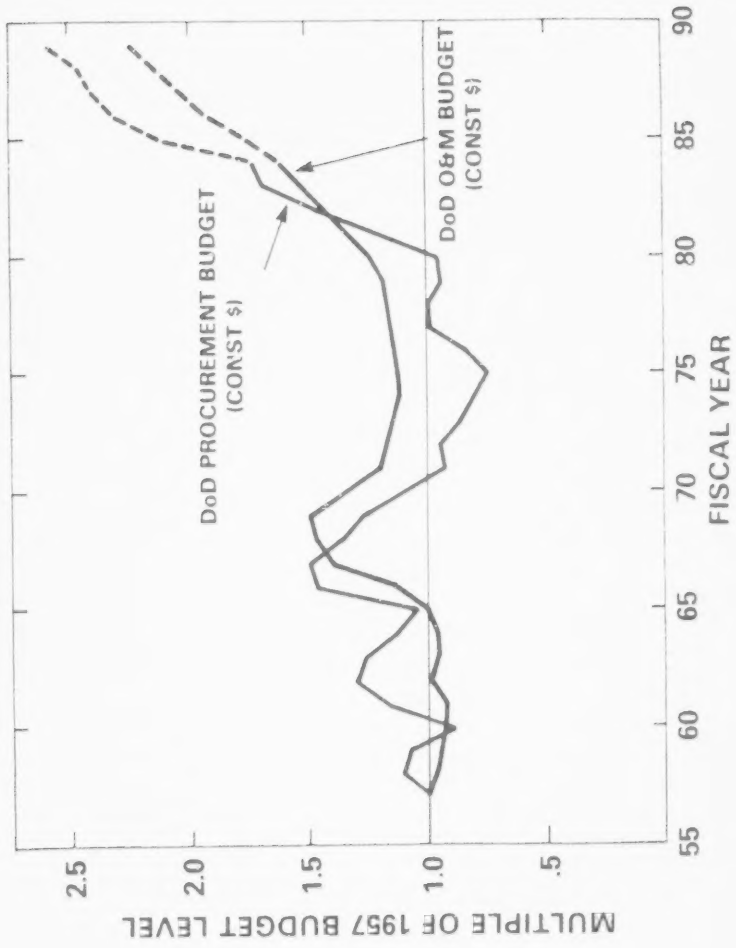
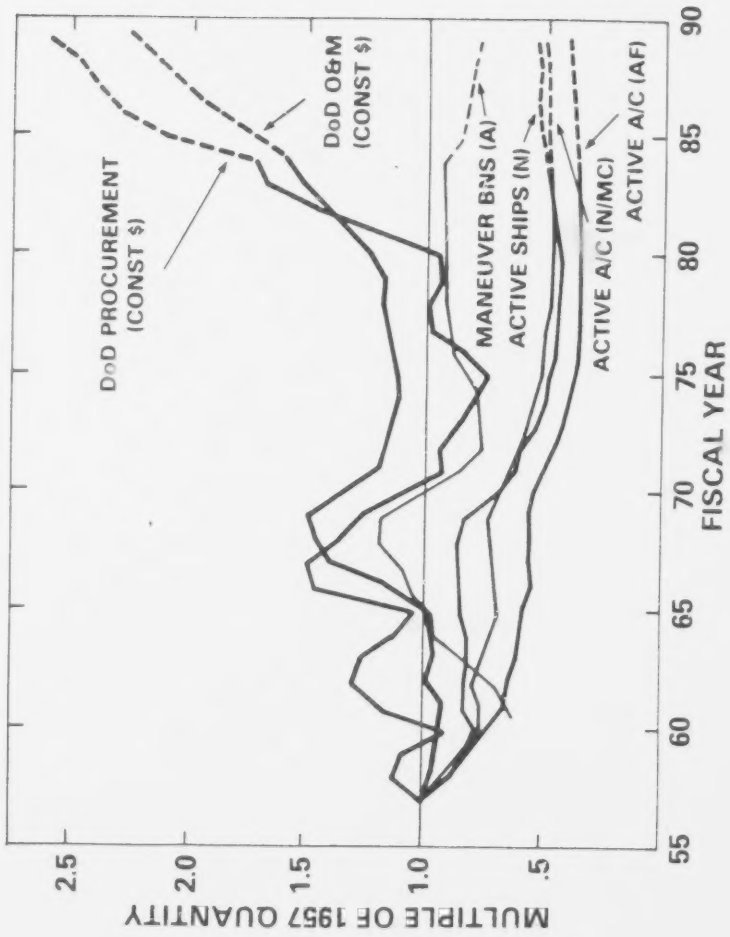


CHART 52

FORCES VERSUS BUDGETS (NORMALIZED TO 1957 QUANTITIES)



CONCLUSION

THE PLANS/REALITY MISMATCH IS A STRUCTURAL PROBLEM

- EVIDENCE TO DATE SUGGESTS THAT CURRENT PLANS AND DECISIONS EXHIBIT THE HISTORICAL PATTERN
- TO GET AT THE STRUCTURAL PROBLEM, WE MUST MODIFY THE BASIC ASSUMPTIONS AND DECISIONS SHAPING OUR PLANS
- IN PARTICULAR:
 1. PLANNING ASSUMPTIONS SHOULD OFF-SET, NOT MAGNIFY, EACH OTHER – OPTIMISTIC ASSUMPTIONS SHOULD AND CAN BE BALANCED BY PESSIMISTIC ASSUMPTIONS
 2. WE SHOULD DISCIPLINE OURSELVES TO CANCEL PROGRAMS AND CONTAIN PRESSURES TO START-UP NEW PROGRAMS

Senator GRASSLEY. If you would, back up four or five charts. The last statement:

We are under continued pressure to reduce readiness, slow rates of modernization, and ultimately shrink the force size, even when the budget is increasing.

Well, up to the point where you say, "even if the budget is increasing," that is exactly the same argument I have heard in the last week since our proposal to freeze the defense budget has surfaced, by the people who say that you cannot freeze the defense budget because those things will happen. And what you are saying is they happen even when you do not freeze the defense budget.

Mr. SPINNEY. Yes, sir.

FREEZING THE BUDGET WILL BUY TIME

Senator GRASSLEY. Then, from that standpoint, do you assume it is going to be worse if you freeze the defense budget, or not necessarily—I think I asked you a similar question earlier.

Mr. SPINNEY. It depends on what we do if we freeze the defense budget. If the purpose of a budget freeze is—

Senator GRASSLEY. Again, we are talking about budget authority.

Mr. SPINNEY. Yes. Well, in a general sense, if the purpose of a budget freeze is to try to cut the budget some way in all categories, and that is a way of doing it, I do not think it is going to solve any problems. On the other hand, if the purpose of the freeze is to buy time—

Senator GRASSLEY. That is what it is.

Mr. SPINNEY [continuing]. If we can sort through these problems and come up with a strategy for resolving them, then I do not think you can make a case that is a freeze going to hurt things. We are hurting ourselves, anyway.

Senator GRASSLEY. Yes. To make the record clear, the latter is the purpose.

Mr. SPINNEY. Right.

Senator GRASSLEY. Now, I want to thank you, but I have a few questions, and I think it will take just a little while.

Senator Chiles also will have some questions to submit for the record.¹

I would also like to have you submit for the record all unclassified updates of the spaghetti charts that you gave last year on the learning curve.²

In regard to that, I would like to have you update the charts as you went through those 97 programs last year. Although you said you did not remember exactly, my impression is that in almost every case, the learning curve just did not materialize. You took us up to 1982 last year, right, in the spaghetti charts, from 1977 through 1982?

Mr. SPINNEY. Yes, sir.

POSSIBLE CHANGES IN GENERAL TRENDS

Senator GRASSLEY. OK. So you have got one more year now, 12 months, to look at that. I would like to know whether or not there

¹ See p. 694.

² Not available at time of printing.

would be any change in those general trends that you showed from 1977 to 1982 between 1982 and 1983. The purpose of my asking is to determine if this administration has instituted any policy changes I could point to as evidence that it is not business as usual, as far as the learning curve is concerned.

Could you generalize now for the period of 1982 to 1983, 1 year later, if the trend has continued?

Mr. SPINNEY. Well, the spaghetti diagrams would have that information, and I will try to generalize it from the spaghetti diagrams. That may be a little bit—

Senator GRASSLEY. Well, then, maybe I should ask you to submit a response to that in writing; could you do that?

Mr. SPINNEY. I will do the best I can.

Senator GRASSLEY. OK.

Mr. SPINNEY. One of the problems we have in trying to do that over a 1-year period is you are not looking at a long-term process. So it is going to be difficult—it may be difficult. I do not know. I will have to go through it.

Senator GRASSLEY. Well, if to be intellectually honest, you just cannot generalize, then I will have to accept that.

Mr. SPINNEY. OK.

Senator GRASSLEY. But somewhere down the line—how many years do you need to analyze whether or not Carter after Ford made any changes, or Reagan after Carter has made any changes? I have been told a dramatic change is being made, that it is not business as usual.

Mr. SPINNEY. I will do the best I can. I think I can give you something.¹

READINESS ACCOUNT SHORT-CHANGED

Senator GRASSLEY. My last question that my staff and I prepared was a little bit along the line of what I just asked off the top of my head. I would like to put that, then, in this context. It refers to December 1980, during the Carter administration, when you issued an analysis called "Defense Facts of Life." In that analysis, you made this comment:

The future consequences of today's decisions are: economically unrealistic plans that reduce our ability to meet the threat in order to make room for future money advocated to meet hypothetical threats.

Now, it is 3 years since you made that statement, and I would like to have you explain what you meant by that statement, and tell us if this problem has improved or worsened since then.

Mr. SPINNEY. Well, the statement you are referring to was made in summarizing the analysis documented in that report. I was describing how we short-changed the readiness account in the near term in order to pump money into procurement in order to modernize, and that we did that on a continual basis. In fact, the example I used at that time was: When I first arrived at the Pentagon, the future Soviet threat was considered to be more severe than the current threat; the threat would get to be very serious in the late 1970's. As we got to the late 1970's, the severity of the threat shift-

¹ Not available at time of printing.

ed out to the 1980's. That was the process I was referring to. It is just like the shift in the window of vulnerability. It sort of moves off into the future. It is a rationale we continually use to justify reductions of current capability in order to modernize in the future.

PRESENT CONDITIONS COULD MAKE PROBLEM WORSE

Senator GRASSLEY. Has the problem improved or worsened since then?

Mr. SPINNEY. I think it is going to worsen. The reason I chose those words is because we have made some improvements in readiness in the last few years. We have had enormous increases in the defense budget. The bulk of those increases have gone to procurement, for modernization. However, there have also been large increases in the readiness account. So the readiness situation has improved over the late seventies level. I still do not believe readiness is as high as it should be—for example, in terms of pilot flying hours and things like that, but that is something that reasonable people may differ on.

The problem that I see emerging now is: If we start going through a series of budget cuts over the next couple of years, and if we do not bite the bullet and cancel major programs, we will be forced to cut the readiness accounts—ammunition stockpiles, flying hour programs, operations and maintenance, personnel budgets, and things like that—and then our readiness is going to decline.

So I think we have set these conditions now and if we do not bite the bullet and step up to the problem, we are going to make things a lot worse.

Senator GRASSLEY. And biting the bullet is best exemplified by forcing people to choose, to make choices.

Mr. SPINNEY. Yes, sir.

Senator GRASSLEY. There have been very few choices made over the period that you have covered in your study.

Mr. SPINNEY. That is right. We are not canceling programs.

Senator GRASSLEY. In your opinion, would spending more money the way we are presently spending it make matters worse, or should we feed the problem, as we are hearing from those who want to increase defense spending?

Mr. SPINNEY. I think that spending more money without solving the structural problem will make matters worse.

DESTRUCTIVE OPTIMISM EXISTS EVERYWHERE

Senator GRASSLEY. You have looked at this problem of plans versus reality for much longer and, of course, in greater depth than any of us. I want to compliment you for that and indicate that you have performed a very good service to your country. In your opinion, how broad a problem is this in Government, and what are its effects on the overall budget?

Mr. SPINNEY. Well, I think it is pervasive, but I have to caveat that statement by saying I have not really looked at the other categories of Federal spending in great detail.

Senator GRASSLEY. Not as in-depth, but you have obviously looked at it to some degree.

Mr. SPINNEY. Yes, sir, and I have talked to people who have looked at it. And it looks to me that the problems I am describing here are fairly typical problems across-the-board. They are going to differ in detail, in the different functions served by different parts of the Government, but I think the basic pattern of this destructive optimism exists everywhere.

I think your deficit chart illustrates the consequences of this pattern of planning.

Senator GRASSLEY. I get the impression that the planning strategy as you have described it in DOD is designed to increase input and lower output, like a unilateral disarmament with every-increasing costs.

Do you agree?

Mr. SPINNEY. Yes, sir.

Senator GRASSLEY. I would only ask before we adjourn the meeting, if there is any other member or staff who will need to have a statement made.

[No response.]

Senator GRASSLEY. I want to thank you very much, and particularly for being patient while I was accommodated for the reason of being at the Finance Committee. I also had a conflict with Judiciary.

I also want to thank Secretary Weinberger for answering our request that you be allowed to update your analysis and to come and present this testimony.

I am a firm believer that if we get all the information out on the table, and have it understood, that we will not make mistakes like we have made in the past.

Thank you very much. The meeting is adjourned.

[Whereupon, at 1:30 p.m., the committee was adjourned.]

WRITTEN QUESTIONS FROM SENATOR CHILES TO MR. SPINNEY AND THE RESPONSES

READINESS AND OPERATIONS AND MAINTENANCE FUNDING

Question: Mr. Spinney, a great deal of concern has been expressed in recent years on the subject of readiness and the level operations and maintenance funding needed to support it. You have indicated to us that the DoD's current plans call for most of the funding increases going toward procurement of new weapons systems. Considering the increased quantity and complexity of these weapons systems is it your opinion that we will be able to support these new weapons systems within currently planned levels of operations and maintenance funding?

Answer: I believe our plans continue to underestimate the future operating costs of our forces. Current plans continue to allocate more growth to the procurement budget than to the operations budget. This is the standard historical pattern. In the past we have modernized with equipment that is more complex and more expensive to operate than the equipment that was being replaced; current plans appear to be accelerating this trend. Over the long-term, the net result these budgeting and modernization strategies has been an unplanned rise in operating costs--and this increase has occurred despite substantial force structure reductions. For example, between FY1957 and FY1984, the DoD O&M budget (in constant dollars) increased by 60%, but the force size in FY1984 was much smaller than in FY1957--e.g. AF active aircraft inventory shrunk by 63%, Navy active ship inventory shrunk by 50%, and active duty Army manpower shrunk by 22%. Much of this cost growth was unplanned and the only way to contain unplanned growth in the operating budget was to reduce readiness and to shrink the size of the force. Since current plans exhibit the standard historical pattern--i.e. the mismatch between planned growth in the procurement and operating budgets, and the emphasis on modernizing with higher complexity weapons, I do not believe that current projections of the operating budget contain sufficient growth to ensure that the projected force will attain a high state of combat readiness.

WEAPONS SYSTEMS COSTS

Question: Mr. Spinney, your study indicates that the DoD plans show significant price decreases over the next five years in 33 of the 89 major weapons systems you surveyed. From your experience how often do these decreases in the unit price of weapon systems materialize and if they don't what effect will this have on our plans and our budget?

Answer: In my sample of 89 weapons systems, our plans project unit cost decreases for 64 programs. These decreases are broken down as follows: 17 programs project unit cost reductions of greater than 45%, 25 programs project cost reductions in the range of 20% to 44%, and 22 programs project cost reductions in the range of 1% to 19%. In the past, planned cost reductions have not materialized for a variety of reasons. The reasons are described in the Plans/Reality Mismatch which was submitted to the Senate Budget Committee in March 1983. Since my current analysis indicates that today's plans conform to the historical pattern, there is substantial reason to suspect that the cost declines projected by our current plans will not materialize. If these cost reductions don't materialize, we will be faced with the following general options: (1) Increase the total budget to fund actual costs at planned production rates; (2) Transfer funds from the readiness account to the modernization budget and fund actual costs at planned production rates; (3) Slow production rates and accept additional cost growth; and (4) Cancel low priority programs to fully fund high rate production of high priority programs.

FOLLOW-UP

Question: Mr. Spinney, the Administration's budget shows a 13 percent real growth rate in FY 1985 followed by steadily decreasing levels of growth in the outyears. The new Republican plan calls for between 7 and 8 percent real growth in FY85 followed again by decreasing levels of growth in the outyears. Does your analysis indicate that the costs of these weapon systems will decrease enough to justify these smaller levels of real growth in the outyears?

Answer: The structural problem described in my analyses is independent of the specific growth assumptions underlying the various five-year plans--it is a problem of how we spend our money as opposed to how much we spend.

Question: Annually, the Congress is told that prices of new weapons systems will decrease as soon as the weapons are produced at an efficient rate.

- Does this assumption mean that there will be no design changes for these weapons systems?
- When Congress does face weapons programs with escalating costs, is it likely that many of these costs are due to unrealistic cost estimates, and numerous design changes?
- Would you agree that part of the solution to the problem of runaway weapons costs is to require the manufacturer to be realistic about his costs and also how his weapon will perform before the weapon goes into production?
- Would you agree that asking the manufacturer to guarantee, for example, his cost, is a progressive step towards eliminating cost overruns and eventual underfunding?
- Would you agree that if a manufacturer guaranteed his weapon's performance in the production contract, he could strengthen his arguments against unrealistic, untested, and costly design changes that have been forced on him, many times in the past, by the Defense Department?

Answer:

- Generally the assumption of declining future costs implies that there will be no unforeseen major design changes. Known design changes may be accounted for and there is a small allowance for unknown design changes.
- The causes of cost growth are described in the Plans/Reality Mismatch which was submitted to the Senate Budget Committee in March 1983. They include poor initial cost estimates and design changes.
- Yes.
- No, present contracts lay out the cost provisions. In my opinion, this is really a question of enforcing contractual provisions.
- Yes.